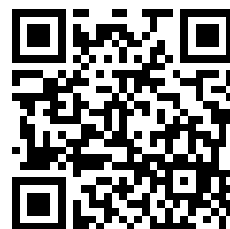
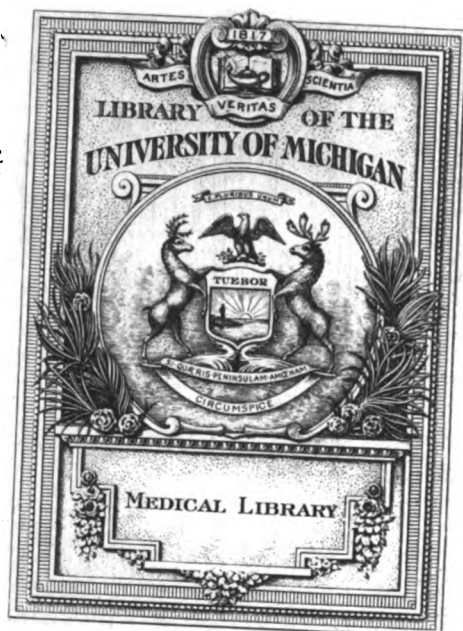

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EDITED BY

COLONEL DAVID BRUCE, C.B., F.R.S., D.Sc.

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VOLUME IX.

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No. 1

Journal of the Royal Army Medical Corps.

Original Communications.

AN IMPROVED PREPARATION FOR INTRAMUSCULAR INJECTIONS OF INSOLUBLE SALTS OF MERCURY IN THE TREATMENT OF SYPHILIS.

BY COLONEL F. J. LAMBKIN.
Royal Army Medical Corps.

SINCE Scarenzio, in 1864, first suggested injections of insoluble salts of mercury in the treatment of syphilis, certain obstacles have always existed in connection with it which have undoubtedly militated against its being universally adopted as the best and by far the most convenient way of treating the disease, *i.e.*, pain at the site of injection, painful nodosities, abscesses and embolism. Although with the progress of knowledge and improved technique the first (as regards metallic mercury) has been reduced to a minimum, and the three last practically caused to disappear, still, that they do exist even now, if to a limited extent, there can be no doubt, and this is the chief cause, and indeed, in a great many cases, the only one, why some of the best known syphilologists of the day hesitate in recommending the intramuscular method before all others in the treatment of syphilis.

Fournier, in his "*Traité de la Syphilis*," says : "Lastly, a weighty argument (which I have already developed in the previous remarks) which condemns the method, is that by its inconvenience, and especially by the pain it inflicts on patients, it constitutes the best method for preventing patients continuing treatment."

In the early days of treatment by this method the main causes

2 Insoluble Salts of Mercury in the Treatment of Syphilis

of the difficulties alluded to were undoubtedly due in the first instance to the ignorance existing at this epoch as regards the necessity for employing antiseptic precautions in carrying out injections, and, secondly, to the unsuitability of the substances which had to be employed as vehicles for the suspension of mercury in the preparation used for injection purposes. The former has, of course, been long since remedied, and pain (at any rate where metallic mercury is concerned) has, as previously stated, been reduced to a minimum, but the other objection has existed more or less up to this day.

The substances which have been employed to hold the mercury in suspension are as follows: Glycerine, gum water, olive oil, vaseline, oil of vaseline and lanolin. Each of these has had its day, one being introduced from time to time as an improvement on the other, and in some respects they may have succeeded in this. Personally, I could never get away from one objection which was common to all. "Being insoluble in the organism they entered the circulation as foreign bodies, and as such might possibly have produced nodosities, abscesses, and embolism." This, of course, is a most grave objection and has always been a source of anxiety to me; however, perhaps I ought not to grumble at the substances (lanolin and liquid paraffin) which I have been in the habit of using, as I have personally never seen any of these accidents follow their use; at the same time there can be little doubt but that some of those grave accidents which have been recorded in connection with intramuscular injections of mercury must be put down to the use of these insoluble substances. Besides this main objection some of the above have others which are much against them. Glycerine and gum water are very irritating and painful, whilst olive oil, vaseline, and oil of vaseline are apt to go rancid.

Some eighteen months ago, in discussing this matter with M. Duret, a well-known French chemist, he suggested *palmitin* as a substitute for any of the above substances as a vehicle.

Palmitin is a neutral fat derived from palm oil, having the same chemical composition as the palmitin of the human system. It is an ether glycerine of palmitic acid, is therefore easily saponified in the fluids of the organism, being converted into a soluble alkaline palmitate and glycerine, and thus it enters the circulation not as a foreign body, like all substances hitherto used as vehicles. For close on eighteen months I have been experimenting with palmitin as a vehicle and have practically adopted it as such at the Military Hospital, Rochester Row, and with the greatest success.

It is unnecessary for me to point out the preponderance of the advantages which I claim for palmitin over all other known substances as vehicles for the suspension of mercury in any form. (1) It is non-irritant and non-toxic ; (2) is not so easily oxidised as the other compounds of human fat ;¹ (3) being already a normal constituent of the human organism, is easily saponified and soluble therein, and *does not* enter the circulation as a foreign body ; (4) as a vehicle it makes a more homogeneous preparation for injection purposes than any other ; (5) its melting point can be raised and lowered with the greatest facility.

I may here state that pure palmitin (which is the only preparation used) is a snowy-white flocculent powder, and great care is necessary to get it *pure*.

ANALGESIA.

As regards Pain.—Although (as far as metallic mercury is concerned) this has been reduced to a minimum, still there is no doubt that it constitutes a grave objection in the practice of intramuscular injections, especially when calomel has to be employed.

With a view to, if possible, abolishing pain altogether after injections, various substances have from time to time been introduced into the mercurial preparations used for that purpose, *i.e.*, morphia, cocaine, beta-eucaine, &c. ; these, acting as they do almost at once, will assuage any pain which may follow immediately after inoculation, but unfortunately, this is not the kind of trouble we have as a rule to deal with, as the pain which bothers us is one which comes on two or three days after the injection, when the above local anæsthetics are fruitless. This is a very serious matter in any case, but especially as regards injections of calomel, for it is here that pain is most marked and severe ; the consequence is that being hitherto unable to cope with it, we have been forced to more or less abandon injections of calomel as anything like a routine method of treating syphilis, and have only employed it under exceptional circumstances when pain was of no consideration. Hence was lost to us our keenest weapon for dealing with syphilis. It has always been my endeavour to overcome this drawback.

¹ *Palmitin.*—In Stirling's work on "Physiology," page 29, it is stated that neutral fats of adipose tissues of the body generally consist of a mixture of stearine, palmitin, and olein.

Professor Halliburton, in "Essentials of Chemical Physiology," page 15, states that the fat cells are composed of three different fats called palmitin, stearine, and olein. Charles, "Physiology and Pathology," page 84, says, palmitin is more abundant than stearine in human fats and *is the chief component* of most animal fats.

4 Insoluble Salts of Mercury in the Treatment of Syphilis

Being cognisant of the analgesic powers of creosote, it struck me that some combination between it and camphor might possibly meet with success. With this in view I consulted the well-known chemists, Messrs. Oppenheimer and Co., London, who informed me that they manufactured *absolute creosote* from the ordinary product, which is obtained from beechwood; that there is a very great difference between what is known as guaiacol and this purified creosote, the former constituting only about 20 per cent. of the bulk of beechwood creosote; the purified creosote is an intimate chemical substance, consisting roughly of 20 per cent. guaiacol, 40 per cent. creosote, and 40 per cent. monatomic phenyl; it is methyl-catechol, and has the empirical formula of $C_6N_4C_{10}H_{10}$; it possesses double the bactericidal effects of pure carbolic acid when tested by the Rideal-Walker process.

With this substance, in combination with camphoric acid, I have been experimenting for some little time now, and I may say at once that it has proved a thorough success as an analgesic in not only combating any pain which may immediately follow on an injection, but, what is much more to the point, it apparently succeeds admirably in preventing the occurrence of that after-pain which comes on on the second or third day, especially after calomel.

The abolition of pain after injections, I need not point out, is one of the very greatest, if not of vital, importance to us syphilologists, not so much as regards metallic mercury (which never caused much), but in the case of calomel it is of prime interest. Syphilologists the world over have long considered calomel to be the most potent salt of mercury in its power over syphilis in all its stages, its action in this respect being truly remarkable; it is more active and energetic than any known salt of mercury, acting promptly when called upon in acute cases, whilst clearing up old-standing ones which may have resisted and baffled all other treatment. Nevertheless, in spite of all this, calomel has been limited to the treatment of certain cases, and the idea of employing it in anything like a systematic manner has been more or less unanimously abandoned owing to one great drawback, *i.e.*, the intense pain which was liable to follow its use as an injection, this latter usually coming on about the second or third day after inoculation, and lasting with more or less severity for three or four days. As regards this pain Fournier gives statistics, collected by himself and Portalier, of 473 cases of syphilis treated by injections of calomel; in 34 per cent. pain was slight, in 34 per cent. it was moderate, in 29 per cent. it was acute, and in 3 per cent. it was intolerable.

This estimate coincides with my own experience, and rather understates the actual amount of pain than otherwise. I have seen so many cases where this has been almost intolerable, that as years went on I approached the giving of intramuscular injections by calomel with more or less dread, and only employed them when absolutely obliged to from the nature of the case. Since I began to use this substance, absolute creosote and camphor, as an analgesic, I have been giving intramuscular injections of calomel with impunity; in fact, during the last few months at the Military Hospital, Rochester Row, I have to a certain extent modified my method of treating syphilis, for whereas previously patients undergoing injection-treatment were put first on metallic mercury, latterly to begin with they are put on weekly injections of calomel; this rapidly causes the disappearance of signs and symptoms, and then they are put on intramuscular injections of metallic mercury.

With reference to this latter it may be well to remark here a fact which has been long since noticed by myself as well as by others, *i.e.*, that although the action of calomel on syphilis is so markedly energetic and rapid, that it is short-lived when compared with that of metallic mercury, hence the necessity of reverting to the latter at an early date.

This combination between pure creosote and camphor possesses other advantages besides its analgesic powers, *i.e.*, it is in the first place non-toxic (which cannot be entirely said of other suggested local anæsthetics), and is strongly antiseptic, being twice as much so as pure carbolic acid, besides which, being a viscous body, it lends valuable aid to the palmitin in making up a vehicle which will hold metallic mercury or calomel in suspension; in fact, the combination goes on to form a most homogeneous preparation, much better in this respect than any I have ever seen before; its consistence at a melting point of 37° C. (which is what I am at present using) could hardly be improved upon.

The following are the formulæ for the two mercurial creams:—

Equal parts of absolute creosote and camphoric acid	}	Hydrargyrum pur.	..	..	10 grammes
		Creo-camph.	..	..	20 cc.
		Palmitin basis	..	..	to 100 cc.
		10 m equals metallic mercury 1 grain.			
Equal parts of absolute creosote and camphoric acid	}	Calomel	..	..	5 grammes
		Creo-camph.	..	..	20 cc.
		Palmitin basis	..	..	to 100 cc.
		10 m equals calomel $\frac{1}{3}$ grain.			
Melting point, 37° C.					

6 *Insoluble Salts of Mercury in the Treatment of Syphilis*

Lieutenant-Colonel Leishman, R.A.M.C., has examined both of the above creams and found them to be "sterile, and that bacteria would not grow in either."

Creo-camph. (otherwise camphorated creosote) is absolute creosote in combination with camphoric acid, and is isolated as such from creosote obtained from beechwood by fractional distillation as methyl-catechol. As before stated, both these preparations form creams of almost perfect consistence and homogeneousness. Both the metallic mercury and calomel are triturated with the other constituents by a special process which has been highly developed by Messrs. Oppenheimer. Both are very finely divided. Messrs. Oppenheimer, to prevent any chance of overdosing, supply these creams in asepticules, each graduated to hold a maximum dose of 15 m.

To sum up, I would briefly remark that, in my opinion, the substitution of palmitin, which is a soluble constituent of the organism, as a vehicle for the suspension of mercury, in place of the insoluble substances hitherto in use, and the success which has followed the adoption of camphorated creosote as an analgesic, begins a new era in the treatment of syphilis by intramuscular injections of insoluble salts of mercury, for, in the first instance, one great objection to the treatment, *i.e.*, the introduction of insoluble foreign bodies into the circulation, is done away with, and in the second, pain has been practically abolished even in the case of calomel; needless for me to point out what abolition of pain means to most patients, be it ever so slight, but in this case it means much more from the surgeon's point of view, in that it places at his disposal the best and most energetic mode of dealing with syphilis without let or hindrance, *i.e.*, injections of calomel.

THE ORGANISATION OF RECRUITING IN THE NORTHERN COMMAND.

BY **LIEUTENANT-COLONEL S. WESTCOTT, C.M.G.**
Royal Army Medical Corps.

I.

THE physical examination of recruits and their physical training is the immediate concern of medical officers, but these subjects are so intimately associated with the means of obtaining them, and with the duties of the officers responsible for their military training, that I propose to trace on a comprehensive basis the life of a recruit from his enlistment till he takes his place in the ranks as a trained soldier.

The recruit is obtained by means of agencies which are dotted about in the large towns of the United Kingdom. In populous towns from which a considerable number of recruits may be expected, such as Sheffield, Manchester, Leeds, and Liverpool, houses with many rooms are rented, and a Recruiting Staff Officer is placed in command of a staff of recruiters of various classes. In the smaller towns non-commissioned officers are placed in charge, having one room only as an office and examination room. The following is an example of a recruiting staff of a town with a population of about 300,000 :—

Recruiting Staff Officer.. .. .	1
Medical Officer	1
Paid Recruiters (2s. <i>per diem</i>).. .. .	3
Special Paid Recruiter, Foot Guards (2s. <i>per diem</i>)	1
Paid Pensioner Recruiters (2s. 6d. <i>per diem</i>)	2
Ordinary Recruiters (unpaid)—	
Sergeant-Instructors of Volunteers	14
Permanent Staff of Militia	Variable.

All recruiters receive a reward for each recruit finally approved ; but if they are raised from the Militia at any time before the end of their first training, the sum of 1s. is deducted.

The reward for Household Cavalry is	£3
„ Foot Guards, R.A. and R.E. is	5s.
„ all other corps at headquarters	2s. 6d.
„ „ „ an out-station	4s.

The following table shows the relative value of the various classes of recruiters :—

8 Organisation of Recruiting in the Northern Command

TABLE I.—SHOWING THE AVERAGE NUMBER OF RECRUITS FOR THE LINE AND MILITIA RAISED BY THE VARIOUS CLASSES OF RECRUITERS IN THE GROUPED REGIMENTAL DISTRICTS MENTIONED, DURING THE PERIOD JULY—SEPTEMBER, 1906.

Class of Recruiter	Paid Recruiters			Paid Pensioners			Militia Staff			Yeomanry			Volunteers			Others		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Yorks Group	17	5.2	6.6	12	11	7.3	85	.7	.3	56	.1	.1	84	.6	.3	29	.5	.1
Border Group	3	7	8	0	0	0	114	.7	.3	18	.1	0	82	.4	.2	16	.7	.3
Midland Group	3	12	13.6	2	12	16.5	138	2.1	1.6	30	.06	.03	97	1	1.3	41	.4	.4
Total and Average	23	8	9.4	14	11.5	12	337	1	.7	104	.1	.04	263	.7	.6	86	.5	.3

A. Number of recruiters.

B. Average number of Line recruits per recruiter.

C. " " Militia " "

The paid pensioners were the best and cheapest of the paid recruiters during the period, the probable explanation being that they become domiciled in the districts for a great many years, and acquire local influence and knowledge. A recruiter who lives in the centre of a district raises more recruits than one who lives out of it and who only visits it periodically. It is interesting to note the successful use made of the Militia and Volunteer staffs in the Midland group, and the almost entire reliance upon paid recruiters in the Yorkshire group.

The interests of the recruiting staff and those of the medical officers are conflicting. The recruiters do not get their reward unless the recruit is finally approved, and the recruiting officers naturally wish to obtain large numbers; whereas the medical officer has always to bear in mind that his judgment will be liable to be questioned if those he has pronounced fit break down and have to be discharged during their training.

With the object of co-ordinating the work of all those who are engaged in recruiting, and of rendering the returns more reliable, the General Officer Commanding-in-Chief issued the following instructions in the early part of the year :—

INSTRUCTIONS FOR RECRUITING OFFICERS REGARDING THE MEDICAL EXAMINATION OF RECRUITS.

The name and address of every *bonâ-fide* applicant for enlistment will be taken by recruiting agents, and in the case of rejection the cause of unfitness will be recorded.

This information, alphabetically and numerically arranged, will be

registered by the recruiting officer or non-commissioned officer at all centres at which medical examination is conducted, a red line being drawn at the end of each month's entries in the Register.

<i>Example.</i>				
No.	Date.	Name.	Address.	Cause of Rejection.
6	14/5/06	Jones, T.	--	—

The recruiting officer will endeavour to ensure accurate entries by occasionally having them verified by enquiries at recorded addresses.

Every effort will be made to prevent the same applicant appearing more than once on any return, whether he applies in his own name or in an assumed one. If an applicant is recognised as having applied before, he will be entered in red ink, without a number, with a note.—“See No. —.”

The recruiting officer should, in accordance with paragraph 115, Recruiting Regulations, 1903, occasionally attend the medical examination of recruits in order to study the physical requirements, and to maintain co-operation with the medical officer; if either officer should have any doubt about the fitness of any applicant, the recruiting officer will attest him and detain him for the decision of the Medical Inspector of Recruits.

Every recruiting non-commissioned officer should attend a course of instruction by the recruiting medical officer, in accordance with paragraphs 86 and 115, Recruiting Regulations, 1903, and the recruiting officers will afterwards supervise the primary physical examination of recruits by the non-commissioned officers. Privacy and decency should be observed, and no applicant should be stripped in the presence of another.

The medical officer passes a recruit as “fit for the Army” only, that is, for the lowest physical grade—the infantry—irrespective of the branch of the Service in which he has expressed a wish to serve; it is the duty of the recruiting officer to compare the details recorded by the medical officer in the Attestation with the various tests, and to induce the recruit to join that corps for which he is eligible and most suited. If the age recorded is under the standard, the recruiting officer will verify it by obtaining the birth, or school board, certificate, and, if necessary, will apply for authority for special enlistment, in accordance with Recruiting Regulations, 1903, paragraph 53 (3). If the height recorded is under standard, special authority for enlistment must also be applied for. A recruit under chest measurement is inadmissible. In the case of an applicant “under weight” being sent to the medical officer, the deficit in weight must be due solely to want of food, and not to inferiority of type.

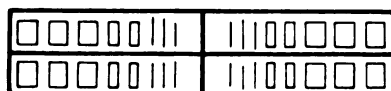
A monthly return will be compiled by the recruiting officers, from the Rejection Registers and the Attestations, at each medical examining office, and submitted to the Medical Inspector of Recruits by the 3rd of

10 Organisation of Recruiting in the Northern Command

the month. No recruit who can be saved by dental treatment at a reasonable cost should be lost to the Service; such a recruit should be attested (if not already enlisted) and sent by the medical officer to the Command dental surgeon, provided that the cost of railway fare be less than that of treatment by a local dentist, when one will be employed by the medical officer.

The purchase of a stamp such as this—

Specimen of Tooth Stamp.



for the record of teeth is advised, the pen being drawn through those which are missing or decayed.

If doubtful cases are submitted to the Medical Inspector of Recruits in this manner co-ordination will be ensured.

No recruit will be sent to an unauthorised civil medical practitioner for examination.

These instructions have resulted in the cordial co-operation of the recruiting staff and the medical officers, either of whom is authorised to have any doubtful recruit detained for the decision of the Medical Inspector. But the statistical returns are still far from satisfactory. There are large numbers shown as offering for enlistment, who either make inquiries from a recruiter, or whom the recruiters solicit on their rounds. They are either cast at sight as useless, or fail to appear for examination. They are jotted down in the recruiter's book, and no further information can be obtained about them. They cast a doubt on any statistical inquiry, and mislead the Army and the Public.

I think that it would be better to abolish the first four columns of Army Form B 137, and count as *bonâ-fide* applicants only those who attend at a recruiting office. It would then be possible, provided that there was an efficient organisation of the recruiting staff throughout the year, to obtain an accurate estimate of the state of recruiting, instead of the rough idea obtainable under the present system.

The reduction of the staff of non-commissioned officers at headquarters of each recruiting district by one "regular," and the appointment of a suitable pensioner as non-commissioned officer in charge of recruiting duties, would save money and ensure that continuity of effort which, owing to the constant absence and change of staff, is at present impossible. Such appointments

should be for one year only, with power to extend indefinitely by yearly periods, depending on the health and energy of the holder.

As instances of my meaning, I will cite actual occurrences. On a certain quarterly return, B. 137, there appeared 271 as having "offered for enlistment," but the sum of the monthly returns rendered to me, accounting for each applicant, was 185, the difference of figures being accounted for as follows :—

"Offered for Enlistment"	271
Deduct men seen outside, of no use	49
Leaves	222
"Served with Notice Papers"	222
Deduct those who failed to appear for examination	37
Leaves <i>bona-fide</i> applicants	185

Again, during a certain four months "recruiters' rejections" were recorded as 408. In the following four months they had dropped to 2. The whole of the recruiting staff had gone off to camp; no one who understood the work remained, which consequently came to a standstill.

The omission of the columns "Offered for Enlistment" and "Served with Notice Papers," and the appointment of the permanent non-commissioned officer in charge, would remedy these faults.

Below are the total numbers found fit by medical officers in the Command during the period covered by my statistics. The whole of these were not, however, finally approved, as many were unable to obtain characters, or were otherwise ineligible. The extent of the losses from these causes I show in the second and third columns.

	A	B	C
April—June, 1905	1018	222	21 %
July—September, 1905	1989	429	21 „
October—December, 1905	2095	329	15 „
January—March, 1906	1816	270	14 „
April—June, 1906	1114	150	13 „
July—September, 1906	1654	404	24 „
	9686	1804	18 %

A = Total number found fit.

B = Number passed as fit by medical officers, but rejected afterwards by the recruiting officers for causes other than physical.

C = Percentage of the same.

In the spring of 1906, a Medical Inspector of Recruits was appointed to each Command, with the object of establishing a

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general uniformity of recruiting methods and standard requirements, and of observing the physical training of recruits. The inspectors met frequently at the Recruiting Office, at St. George's Barracks, London, and studied the various problems of recruiting, framing some general rules for their mutual guidance. The Medical Regulations were, of course, to be observed, but some of them being conceived in general terms, were likely, by their elasticity, to lead to differences of opinion, and these required to be adjusted.

The following copy of Instructions to Recruiting Medical Officers of the Northern Command embody the debatable points in judging recruits which the inspectors considered should be discussed with recruiting medical officers :—

INSTRUCTIONS FOR RECRUITING MEDICAL OFFICERS.

The medical officer should study Medical Regulations, paragraphs 461-476. He will carry out every detail of the examination himself in the order laid down in Appendix No. 16. Attention is invited to the paragraph on the measurement of the chest.

Defects should be noted on the medical history sheet as a proof that they have been recognised and considered.

A more valuable record of the teeth on enlistment than the mere entry of the number decayed, or missing, can be made by means of the tooth stamp before described (see Instructions for Recruiting Officers), the pen being drawn through those missing or decayed. When the Command dental surgeon is not available, and a local dentist is employed, it is simply necessary to inquire of any registered dentists if they are willing to treat such recruits as may be sent to them on certain terms. The usual fees charged to persons of the recruit class are : 2s. 6d. per filling, 1s. for extraction, 2s. to 2s. 6d. extra for gas; and these may be suggested to the extent of a monthly average of 10s. per recruit. Thus 1s. may be spent on one man, and 19s. on the next. If this arrangement is not feasible, 10s. per recruit may be offered, but the work performed under this system should at least equal in extent that of the other. All work done under this system requires careful inspection, and final approval should not be signed until the medical officer is satisfied. The dentist should not be requested to attempt any fillings which he cannot guarantee to last. Militiamen are not eligible for treatment by local dentists at public expense, nor are enlisted recruits, unless selected by the Medical Inspector of Recruits.

The diagrammatic guides to masticatory efficiency below are not to be construed literally, but merely as rough ideas.

For the Line.

2 molars on either side	11	
	11	
	00111	
1 molar, 2 bicuspid on either side	00111	
	00011	11000
2 bicuspid on each side	00011	11000
	1	11000
1 molar on one side }	1	11000
2 bicuspid on the other }		
	1	11000

For the Militia.

2 bicuspid on one side	00011
	00011

Every endeavour will be made to prevent the counting of any applicant more than once in any return. If any man is recognised as having been examined before, his name will be entered in A.B. 46 in red ink, and should he be rejected, he will not be given a fresh number. In either case a note "See No. —" will be made, and a warning slip sent to the recruiting officer.

A separate register, alphabetically and numerically arranged, will be kept for those rejected, of which the following is a specimen entry :—

No.	Name.	Line or Militia.	Date.	No. in A.B. 46.
6	T. Don	L.	2.4.06	942

The principal debatable points in recruit judging, and those on which the Medical Inspector of Recruits wishes to be consulted are :—

Teeth. Disorders of heart. Intelligence. Stammering. Varicose veins.
 Varicocele. Tendency to hernia. Loss of fingers or toes. Hammer toes.
 Overlapping toes. Stiff big toe joints. Bunion. Flat feet. Knock knee.
 Radical cure. Vision. Weight. Age. Perforated tympanum.
 Obstruction to nasal breathing. Chronic enlarged tonsils. Disease of eyelids.

The medical and recruiting officers should work together, and should either have any doubt about the fitness of an applicant, he should be attested and the Medical Inspector of Recruits furnished with details.

These instructions must be read in conjunction with those of the same date issued to recruiting officers.

II.

Teeth.—The instructions regarding the employment of local dentists apply only to the Northern Command, the General Officer Commanding-in-Chief of which obtained authority in June, 1905, to expend certain sums of money on dentistry as an experiment. The teeth question has always been a stumbling-block. The inspectors attempted to settle the interpretation of "a sufficient number of sound teeth for the purposes of mastication" required

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by the Medical Regulations, by fixing a certain number, and their relative positions. At first, loss or decay of eight teeth was to exclude; but it was so rare to find a man up to this standard that it had to be dropped. The instructions are now based on the excellent paragraph on this point in Appendix No. 16, II., Regulations for Army Medical Services. The physique is first to be judged; if this is good it is evident that the recruit is maintaining himself at that level with whatever teeth he has. Should we discover that he has only one incisor opposing another in the whole of his mouth, we may argue, either that he has a sufficient number of teeth for the purposes of mastication, or that mastication is unnecessary in his case, or that he performs it with his gums or stumps. But in order to settle this difficulty the inspectors circulate the following diagrams as guides to requirements, not to be construed literally, but to be taken as giving rough ideas of the number of opposing teeth necessary. Even though an inspector or medical examiner hold the individual opinion that teeth may be unnecessary in any given instance, still, such a recruit should not be taken unless he has the equivalent of these standards.

Molars.	1	11000	Bicuspids.
	1	11000	
	000011	11000	
Bicuspids	000011	11000	Bicuspids.

Efficiently stopped teeth are to be counted as sound. Artificial teeth are to be regarded as a luxury; recruits must possess the minimum standard without them. As with the blind man and his spectacles, so it is with the toothless; the loss of artificial aids on active service leads to inefficiency.

Medical officers are also instructed to carefully consider the extent of disease of the gums, roots and sockets. For instance, if a recruit has sound teeth, but suffers from universal *Pyorrhæa alveolaris*, which is incurable, he should be rejected. This affection is common among plumbers and barmen; as a rule, they all have the blue line at the margin of the gums, and suppurating sockets to some extent. Suppurating roots are most undesirable in the soldier; they are liable to lead to complications, and to the decay of adjacent sound teeth.

If the services of a dentist are available at each recruiting office, as they are in the Northern Command, a great deal can be done at a very small cost to prevent further disease. Caries is so universal that it would not be justifiable to spend public money to a greater extent than is necessary to put the recruits' teeth in such a con-

dition as to enable him to perform military service, and to prevent him from suffering in health during that period.

There are two systems under which dentists are employed in this Command. In some towns applicants for enlistment who are disqualified by reason of their bad teeth are treated at 10s. per man. All cavities are filled and diseased stumps extracted, unless the disease is unreasonably extensive, in which case the man is rejected, or a special arrangement is made. The other system is the payment of 2s. 6d. per filling and 1s. per extraction, gas being extra. This system gives more trouble to the medical officer, as he has to specify the work required to be done; but it is cheaper and better from a Service point of view. It frequently happens that only a stump requires removal or a single cavity to be filled, and medical officers hesitate to send such a man at a cost of 10s. No stumps should be removed whose roots are healthy; after they have been cleaned and filed, or filled, they may last for years, and are better than sunken sockets.¹

Intelligence.—The ordinary routine examination is quite sufficient to disclose the quality of intellect of a recruit, but it is difficult to decide in the recruiting room the degree of stupidity which should cause rejection; apparently dull men improve very rapidly during their training.

Stammering.—Medical examiners sometimes forget to ask the questions which are the tests for defects of speech. It is quite possible for a recruit to pass through his physical examination without uttering a word. The "Who comes there?" required to be said loudly by the recruit, is an excellent test for stammering, and any man who fails to say it smartly should be rejected, as he is liable to endanger the lives of his comrades on active service.

Flat Feet.—Flatness of the feet is not a disqualifying defect, but the weakness of flat feet should be a cause of rejection. The Medical Inspectors at first suggested that the pink coloration of the concavity of the arch must show that that portion of the sole had not pressed on the ground, but this rule has since been modified. Ability to use the feet is now the test, and medical officers are warned to apply the test stringently. Recruits must be able to rise on tip-toe strongly, to hop well, and to alight on the toes after springing from the ground. My own observation has fully justified the change of test, and it is supported by the investigations of Hoffman and Lovett, working independently in America, who are

¹ The tooth stamp recommended in the Instructions can be obtained from C. E. Wright, 119, Devonshire Street, Sheffield; price 1s.

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of opinion that "the height and shape of the longitudinal arch have no bearing on the strength or usefulness of the foot," and that "the form of the foot bears no relation to its liability to become weak or painful." The pain caused by a weak arch can be relieved by a Holland's spring arch support.

Overlapping Toes.—Although a man with overlapping toes is capable of earning his livelihood in civil life, in the Army, if he should find any of his military duties irksome, he immediately suffers from pain. He cannot be punished or forced to work, and the great pain persists until he is discharged; so that a great deal of discretion must be exercised when considering the degree of overlapping which may be accepted.

Hammer Toes.—The above remarks apply here also. One ankylosed toe is to exclude, but the recruit may be advised to have the defect removed by amputation, or resection, at a civil hospital, and then to apply again.

Hallux Rigidus, or Stiff Big Toe Joint.—Perfect motion of all joints is required by the Instructions. It is sometimes observed during examination that when a recruit is attempting to spring up from the kneeling position with a simultaneous spring of both legs, he fails to do so. A search for the cause almost invariably reveals ankylosed big toe joint. This defect always leads to breakdown from strain caused by such exercises as vaulting the horse, hopping, &c.; men with it should not be approved.

Bunion.—There is no defect more likely to interfere with the marching powers of the soldier than this, and it should not be approved.

Loss of Fingers or Toes.—The experience of Army medical officers is that men with missing fingers are often unable or unwilling to perform their duties; therefore they have decided that the loss of any joint of a finger or thumb shall exclude. A few men willing and able to perform all military duties are lost to the Service in consequence; but if we calculate that, if accepted, 50 per cent. would be invalided before completing their service, the cost of those who remain would be proportionately increased. The loss of a toe, if it is not the big one, is allowable.

Knock Knee.—A condition that the heels should not be more than two inches apart when the knees were touching was at first required; but the difficulty of applying such a test soon became evident. Provided that a man can walk straight, and that his defect is not a sign of weakness, he is not now rejected for any particular angle of deformity.

(To be continued.)

THE TEACHING OF HYGIENE IN ARMY SCHOOLS.

By MAJOR ROBERT J. BLACKHAM.

Royal Army Medical Corps.

HYGIENE is now a compulsory subject in some civilian elementary schools under the new code, but, as yet, it has not been given as important a position in the curriculum for school teachers as it undoubtedly deserves. At the last annual meeting of the National Union of Teachers it was stated that of the 160,457 elementary school teachers in the United Kingdom only 46·5 per cent. were certificated, and it is believed that, of those certificated, a small percentage only receive any special course of training in hygiene.

In Army schools hygiene is not systematically taught, and it does not form a subject for examination for either schoolmasters, schoolmistresses, or pupils. I have had an opportunity of reading over the examination papers of the last examination for Army schoolmistresses, and was surprised to find that, although a wide acquaintance with English history and purely literary subjects is demanded, no knowledge of general or infant hygiene is required. This is surely wrong, as it must be of the utmost consequence that teachers should appreciate the importance of hygienic rules, and be competent to impart them to their pupils.

The examinations for 1st, 2nd, and 3rd class certificates are sufficiently severe tests in their way; but the military examiners require no knowledge of personal or general hygiene, although it is, surely, more important that a soldier should know the laws of health than the rules of prosody, as physical efficiency is, or should be, his chief aim in life. The education of the soldier in hygiene should not consist, as at present, of a few lectures given by medical officers of units, but should be part of his regular training in school. He should have a good small work on hygiene issued with his school books, and be taught the laws of health as systematically as he is instructed in history and geography.

The only book on hygiene now in use in Army schools is a pamphlet called "Sanitation and Health," which is merely an excellent lecture given in India by a distinguished General. It does not cover the necessary ground and should be replaced by a special manual, or by one of the numerous elementary books on hygiene which are now on the market. The point is that the soldier should be taught from the very beginning of his service that a knowledge of hygiene is an indispensable part of his

education *as a soldier*, and it should constitute a subject of the examinations required for every step in his career. This last is all-important, as when a man knows that a subject will form part of an examination for promotion, it is bound to claim his attention in a more forcible manner than if he studies it in a mere *dilettante* fashion.

Instruction in hygiene now constitutes a part of the routine instruction of staff officers, but it is hoped that before long a working knowledge of the elements of military hygiene will be compulsory for *all* officers. If this is too much to hope for, the following suggestion might, at least, be adopted :—

In regiments, depôts, &c., the executive sanitary duties in barracks are in the hands of the quartermasters. Many of these officers take an interest in this important portion of their duties, but many, again, do not. Now, with few exceptions, these officers alone, among the ranks of the Army, pass from the grade of honorary lieutenant to those of honorary captain, major and lieutenant-colonel without an examination. I propose that an examination for promotion be instituted for quartermasters, and that it should be of the nature of the examination conducted by the Royal Sanitary Institute for sanitary inspectors. This would strengthen the hands of commanding officers in maintaining good sanitation in their lines, as the quartermaster is and must be his colonel's sanitary inspector until my scheme of handing over the entire sanitary arrangements of barracks to the Corps is adopted (*JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, vol. iv., p. 807). Moreover, it would give quartermasters a real interest in sanitation, and non-commissioned officers aspiring to be quartermasters would take a similar interest in this important subject, as they would rapidly realise that an interest in health matters spelt promotion and advancement.

The Army schoolmaster should above all be compulsorily interested in hygiene. His influence in the Army is great, and I feel certain it is invariably exercised for good; but he should not be merely a pedagogue, he should be a preacher of the gospel of hygiene. He should be himself trained in sanitary matters, and for this purpose I would suggest that a course of practical military hygiene should be added to the curriculum for Army schoolmaster students at the Duke of York's and Royal Hibernian Military Schools, and that military and school hygiene should be a subject for examination for each step in promotion. The very nature of the schoolmaster's calling renders it absolutely necessary that he should have a knowledge of the laws of health, for the health

of his pupils should be as great a consideration to him as their advancement from class to class. Indeed, on the former, to a great extent, depends the latter. To the schoolmaster we must undoubtedly look not only for the mental development of his pupils, but to the improvement in physique so essential to the welfare of the nation.

Without unduly interfering with the present Army school curriculum, I would suggest that hygiene might, with advantage, be substituted for the economic and scriptural aspects of temperance now taught. The former consists to a great extent of statistics, not easily grasped by the mind of the child, and the latter can only be taught to a section of the children, as Roman Catholics are prohibited from being present at the lessons given on this subject.

Inspectors of Army schools should be required to pass an examination similar to the one suggested for quartermasters, and the Assistant Adjutant-General (Army Schools) should have associated with him in his work a medical officer specially skilled in school hygiene.

There is another sanitary matter in which our Army schools might do good, namely, in the instruction of girl pupils in the elements of infant hygiene. Medical Officers of Health are agreed that this should be done in civil schools, and in their Annual Reports for 1905 the Medical Officers of Health of many boroughs make out a strong case in support of their opinion that instruction of this sort should be given as a measure of paramount importance in combating the enormous infantile mortality which is a blot on our modern civilisation. Surely a start in this direction ought to be made in the Army. The children born in the Army are especially the care of the State, as the sons of soldiers almost invariably enter the Service, while the girls nearly always become the wives and mothers of soldiers, yet the ignorance of infant hygiene in married quarters is often only equalled by that which exists in the slums of our great cities.

Much is being done to improve the lot of the soldier living in barracks, but the conditions of life in married quarters have more or less escaped the attention of our military sanitary reformers. The drains and water supply have, of course, received every attention, but the question of individual prophylaxis among military children has been overlooked.

I suggest that the Army schoolmistress should be put through a practical—I had almost said a clinical—course of infant hygiene in one of our Military Families' Hospitals. She should be instructed in:—

(1) The feeding of children; (2) the clothing of children; (3) the hygienic bearings of cleanliness; (4) the laws governing rest and exercise; (5) the principles of ventilation; (6) nursery "first aid"; and (7) nursery cookery. A simple book on the care of children should be placed in her hands, and her general educational training would teach her how to impart her own knowledge in an attractive way to her young charges. The lessons taught in school would be repeated in the children's homes, and the fruits of knowledge thus disseminated would, I am sure, be soon seen by a diminished rate of sickness and improved individual hygiene in our married quarters.

Practical instruction to soldiers and soldiers' children in the laws of health involves no material expenditure, and can be productive of nothing but good, but it must be practical. It is useless to fling such sentences as "Indulgence in alcohol is detrimental to the human organism" at your soldier pupil; but instruction in the proper use of a tooth brush, and on the disgrace and danger of spitting, are matters he can understand and may appreciate.

If we wish to produce an intelligent and efficient Army we must educate every soldier, and every possible soldier, or mother of soldiers, in the laws of health. It is useless to deplore the dark pall of ignorance which hangs over the class from which our recruits are obtained. We must make it our business, in association with our civilian colleagues, the Medical Officers of Health, to dispel it.

The engineer and architect work in communities, but upon the physician devolves the far harder task of working on individuals. It is not that we want the Royal Engineers and the military architect the less, they have already done splendid work in improving the soldiers' health, and have still more fields to conquer, but in the protection of the health of the individual, which is the ultimate design of military preventive medicine, we have work for the whole body of those responsible for military education and training. This is a matter not for the laboratory or the hospital, but for the schoolroom and the barrack and the officers and non-commissioned officers doing duty with effective troops.

It is not implied that any large amount of the school day should be occupied with elementary hygiene, or that any other teaching should be subordinated to it. Its importance, however, warrants its inclusion as a regular subject of instruction. As a pedagogic subject it needs no apology, in that it teaches the pupil to see, to reason, and to remember; it lends itself both to training and instruction, and it possesses high ethical value.

OPERATIVE WORK IN THE EGYPTIAN MILITARY HOSPITAL, KHARTOUM, SOUDAN, DURING THE YEAR 1906.

BY LIEUTENANT L. BOUSFIELD.

Royal Army Medical Corps.

THOUGH the operations recorded in this article are not numerous, yet they are fairly varied, and some being of considerable interest are shortly described in detail. Probably only a few officers in the Royal Army Medical Corps know what is the scope for practical medical and surgical work for those joining the Egyptian Army, and this article, which only deals with the operative work for one year in one hospital, will give some idea of the work from a surgical point of view; the medical work is naturally far more abundant, malaria, dysentery, tropical fevers, parasitic and eye diseases forming the greater bulk, with a fair proportion of venereal cases. At Khartoum the sick are mainly drawn from the garrison, which numbers about 3,500, but a large number of invalids are transferred from outlying districts, such as Bahr-el-Ghazal, Kordofan, Kassala, and the Blue and White Nile Provinces, but these mainly supply medical cases, especially malaria and blackwater fever. The more important operative work is almost entirely done by the British officers, of whom there are usually two present, though at times only one. The surgical work last year was done mainly by Captains S. L. Cummins and R. B. Black, Lieutenant D. S. B. Thomson and myself. The accounts of cases in the operation book are often short and meagre, for it must be remembered that the English officers have to supervise the whole hospital as regards interior economy, work outlying stations, supervise the treatment of the sick, do practically all the important operative work at the central hospital and the microscopical work, such work leaving little time for elaborate note making; hence the cases recorded are mainly those that I either saw myself or whom I myself treated, the notes on cases occurring during the first half of the year not allowing of a good descriptive account being given. The following is a list of the operations, excluding such minor cases as amputations of the fingers and toes, circumcisions, hæmorrhoids, abscesses, &c., only those being recorded that were considered worthy of special record in the operation book:—

LIST OF OPERATIONS.

Disease	Operations	No.	Result	Deaths	Remarks
Hernia	Radical cure	17	?	Nil.	The results are not given, as time alone will show their value.
<i>Diseases of Abdomen—</i>					
(1) Appendicitis ..	Drained	3	2 cured	1	Gangrene of cæcum found in fatal case.
(2) Intussusception and gangrene of cæcum	Abscess evacuated	1	—	1	
<i>Abdominal Explorations—</i>					
(1) Tubercle	Exploration	1	Improved	Nil.	
(2) Cirrhosis of liver ..	"	1	"	"	
(3) Typhoid perforation	Ulcer closed. Abdomen drained	1	—	1	
<i>Diseases of Liver—</i>					
(1) Hepatitis	Liver puncture	1	Cured	Nil.	
(2) Abscess	Drained	3	2 cured	1	
<i>Injuries—</i>					
(1) Laceration of arm..	Amputation upper third	1	Good	Nil.	
(2) Compound fracture of skull	Trephined	1	—	1	Severe laceration and bleeding found at autopsy.
(3) Fracture of clavicle	Wired	1	No improvement	Nil.	Old united fracture of many years standing.
<i>Diseases of Joints—</i>					
(a) Acute suppurative arthritis:—					
(1) Knee	Drained	1	Good movement	"	
(2) Elbow	"	1	Temporary improvement	"	Case very debilitated; subsequent cellulitis of arm; suffering from trypanosomiasis.
(b) Chronic:—					
(1) Tumour	Removed	1	Cured	"	Probably fibroma.
(2) Loose body	"	1	"	"	
(3) Tubercle	Excision	1	No improvement	"	Subsequent amputation.
<i>Inflammation of Connective Tissue—</i>					
(1) Cellulitis, scalp ..	Opened	1	Cured	"	Extending over whole of scalp.
(2) " arm	"	1	"	"	
<i>Diseases of Bone—</i>					
(1) Necrosis	Removal	2	"	"	
(2) Mastoid	Radical cure	3	"	"	
<i>Cysts—</i>					
(1) Sebaceous	Removal	2	"	"	
(2) Dermoid	"	1	"	"	Attached to dura mater.
(3) Ganglion	"	1	"	"	
<i>Hydrocele—</i>					
(1) Vaginal sac	Radical cure	7	"	"	
(2) Of cord	"	1	"	"	
<i>Diseases of Rectum—</i>					
(1) Prolapsus	Removal	1	Improved	"	
(2) Hæmorrhoids—					
(a) Ordinary	"	3	Cured	"	Extensive.
(b) Bilharzial origin	Partial removal	2	Improved	"	

LIST OF OPERATIONS.—Continued.

Disease	Operations	No.	Result	Deaths	Remarks
<i>Diseases of the Eye—</i>					
Pterygium	Radical	4	Good	Nil.	
<i>Diseases of Bladder—</i>					
Stone of bladder ..	Lithotrity	1	Cured	„	
<i>Fistula—</i>					
(1) In ano	Opened up	2	„	„	
(2) Lumbar	3 scrapings	1	„	„	
(3) Patent thyro-glossal duct	Dissected out	1	„	„	
<i>Diseases of Lymphatic Glands—</i>					
Tubercle	(1) Complete removal	4	3 cured, 1 improved	„	
	(2) Scraping	2	Improved	„	
Tubercle of knee-joint and fermur	Amputation upper third	1	Good	„	
Tubercle of epididymis	Nodules removed	1	„	„	No recurrence so far (after three months).
Lipoma	Removed	1	„	„	
Obstruction of larynx (?) malignant	Tracheotomy	1	Great improvement	„	Though suffering from syphilis, obstruction became worse in spite of mercury and pot. iodid. — emergency operation.
<i>Abscess—</i>					
(1) Psoas	Scraped	1	Cured	„	
(2) Various	Evacuated	10	—	—	Only the more important are included, such as guinea worm, abdominal, &c.
<i>Diseases of Skin—</i>					
(a) Ulceration:—					
(1) Ordinary	Excision	1	Cured	Nil.	
(2) Lupus	Scraping	1	Temporary improvement	„	
(b) Skin grafting ..	—	2	Good	„	
Suppurative periostitis ..	Drainage	1	„	„	
Cavernous angioma ..	Exploration	1	Operation abandoned	„	
<i>Septic Arthritis, followed by cellulitis</i>	Disarticulation at shoulder joint	1	—	1	Elbow was first drained by two lateral incisions; patient improved, but drainage became inefficient, so olecranon was sawn across and arm put up in acute flexion; great improvement followed, but after some weeks pus passed up between the muscle planes. The patient was very debilitated with trypanosomiasis of several years' duration. Death occurred at end of operation.
Total	number ..	98	Deaths ..	6	

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There were during this year thirty-seven aseptic operations performed in the hospital, and of these thirty-two healed by first intention and five suppurated; thus the percentage of those that became septic was about 13·75. This result may appear rather unsatisfactory, but it should be mentioned that two cases of these five only had slight superficial stitch abscesses, while all the cases of suppuration occurred in cases of radical cure for hernia. In this region one has to contend against various difficulties which are not met with at home, for in the heat of summer it is difficult to prevent perspiration entering the wound; indeed, an attendant is always necessary in summer to wipe the faces of the operator and his assistant every minute or even less; further, one cannot supervise every detail oneself, but it is necessary to trust a great deal to the Egyptian *turmergie* (medical orderly), who, although often an excellent individual, yet is frequently not blessed with much intelligence or reliability, being a peasant and a conscript. Trouble is also met with among the patients, who are extremely difficult to control in the way of keeping in bed and in keeping the preparatory compress in position.

Seventeen hernias, all radical cures, all inguinal, and thirteen on the right side, were operated on, with five failures at healing by first intention, while eight radical cures of hydrocele all healed up without suppuration; thus it seems highly probable that sweating had largely to do with the former going wrong, as the time for a radical cure of a hernia is at least double that for a hydrocele, and it is in the latter part of an operation that perspiration is such a troublesome thing in this climate.

All the gross pathological and most of the microscopical work is done in the hospital; but one is fortunate in having at hand the willing help of Dr. Andrew Balfour, Director of the Wellcome Research Laboratories, Khartoum, who is always ready to give his expert advice in any doubtful pathological condition, and who also prepares and cuts many of the pathological specimens for us and sends us a report on them. A few cases will now be mentioned which are of some special interest, and they will be dealt with *seriatim*.

Hernia.—Of these only two are worthy of mention:—

(1) A middle-aged Sudanese soldier was admitted with a worm-like process passing down from the external ring to the top of the testicle on the right side; this was about the thickness of a lead pencil, and was sometimes present, sometimes absent; it was uniformly round and had a rounded apex, and was without doubt an

appendix of abnormal length. At the operation this was not seen, but a small congenital sac was found and separated from just above the testicle to the internal ring and removed.

(2) A Sudanese soldier with a large right scrotal hernia. On cutting down on the external oblique the outer edge of the external ring was found thickened with a definite cord half a centimetre thick; the cord was quite round and passed upwards and downwards. After careful consideration, taking it to be a thickened edge, I cut it across, and was astonished to find it a nerve as large as the ulner in the forearm. There was no doubt as to its being a nerve, as the various nerve bundles could be distinctly seen surrounded by the connective tissue. At the close of the operation the two ends were sutured together with two catgut and one silk sutures. The case healed by first intention, but I unfortunately forgot to test the patient for anæsthesia, paralysis, &c., till the seventeenth day, when I could elicit no signs of paralysis or of anæsthesia, and the patient, who was as intelligent as a Sudane can be, declared he never felt any anæsthesia after his operation over any part of his skin. What the nerve was, or where its final distribution was, I do not know; it ran from the abdomen down the thigh over Poupart's ligament, or in the reverse direction. It would be interesting to hear if such an abnormal nerve has been met before, for I can find no account of such in any book within my reach.

Abscess.—Under this heading there are three cases of interest:—

(1) A *Bash-Shawish* (Staff-Sergeant) reported sick, complaining of great pain in the region of the right shoulder. No definite swelling was noticed, and no enlarged axillary glands, but as he was running a temperature he was admitted to hospital. The day following admission I found he had marked leucocytosis, and three days later there was considerable diffuse swelling around the right shoulder, but no enlarged glands; however, as the temperature was hectic, he was anæsthetised and needled all round and beneath the scapula, but with no success. Not finding any definite course to pursue he was sent back to bed, but the pyrexia continued and the glands in the axilla became enlarged, so six days later he was again anæsthetised and needled in about ten different places, but with no success. I then decided to cut down into the axilla, and at about the depth of two inches pus was struck, and a large cavity found extending beneath the scapula up to the apex of the axilla and downwards towards the lower angle of the scapula; this was drained with tubes. The cause was not

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found; there was no dead bone that could be felt, and there was no apparent lung disease. The pus was thick and yellowish, and on microscopical examination was found to contain many diplococci and some clusters of staphylococci. The day following the operation the right testicle became swollen, tender, and very painful, but improved under fomentations; however, three days later the left testicle became enlarged and tender, but as no fluctuation was elicited an incision was not made; later, the temperature again rising and becoming hectic in character, incisions were made on both sides, and an abscess was evacuated from the right testicle, and the left tunica vaginalis was found to contain pus, but the testicle on that side was unaffected. Similar diplococci were found in the pus in great profusion, and they were evidently metastatic abscesses. He had no signs of gonorrhœa, and denied having had the disease; no gonococci were found in the films. He has now had a normal temperature for three weeks, and is rapidly becoming convalescent.

(2) An Egyptian soldier, who had served in the Bahr-el-Ghazal, was admitted with a tumour about the size of a chicken's egg, situated below the right costal margin in the region of the eighth and ninth ribs. He gave the history of it being present only about ten days. The swelling was tense, no fluctuation was elicited, and it was not tender; there was no temperature. It was adherent to the abdominal wall, and the diagnoses of tubercular abscess from a rib or of a fatty irreducible hernia were considered. At a depth of about $1\frac{1}{2}$ inches an abscess was encountered containing thick, creamy pus, and the diagnosis of tubercular abscess was thought to be confirmed, when a guinea-worm protruded, which was found to extend upwards 5 or 6 inches beneath the great pectoral. He made an uneventful recovery.

(3) Another soldier was admitted suffering from a large abscess about the size of a Tangerine orange, situated over the upper third of the right tibia. There was no temperature, local tenderness or heat, and on opening a large amount of pus with a guinea-worm escaped, and the front of the tibia was found to be deeply grooved to the depth of about $\frac{1}{2}$ inch by the guinea-worm. The case proceeded favourably for ten days, when the right knee-joint became acutely inflamed, and the temperature rose to 104° F., accompanied by a rigor. Some fluid of a turbid character was withdrawn by an exploring syringe from the knee and examined microscopically, and found to contain cocci and a few streptococci. The knee was promptly opened by means of two lateral incisions, drained and

washed out. Great improvement followed; but ten days later Captain Black, who was then looking after the case, had to enlarge the openings to procure freer drainage. The knee has now recovered, and the man has at present good movement up to a right angle, and it is hoped, after further working under an anæsthetic, to send him out with a very useful, though somewhat crippled, limb.

Intussusception and Gangrene of Cæcum.—This patient came from Kordofan, and had been ill for many weeks with fever. On admission he was very emaciated, and after coming into hospital had pyrexia, varying from 100° F. to 102° F., for five weeks, without showing any cause for it. He complained of no pain, but only of weakness. He had suffered from malaria and was now suffering from active tertiary skin lesions on both legs. We found no malarial parasites in his blood, his spleen was but slightly enlarged, and his condition was complicated, in that he indulged in *hasheish*, and though in hospital one could not be quite certain he was not still indulging in this habit. His bowels were regular, but appetite poor. On July 20th he complained of pain over the whole of the lower abdomen, but there were no physical signs; there had been for some time previously a slight trace of albumen in his urine with some pus cells, and the question of pyonephrosis had been raised. On the 23rd diarrhœa set in, but nothing abnormal was noted in his stools; on the 24th a definite tumour was felt in the right loin about 1½ inches above McBurney's point; it was deeply situated and could be grasped between the hands in front and behind. The diagnosis of pyonephrosis was thought to be confirmed. I cut down on the right kidney but found it healthy, the lump lying in front. This was explored and some thick, curdy pus escaped; gas came out through the opening and the gut was found to be of a deep plum colour. The appendix was thought to be felt, apparently bound down to the pelvis in the abscess cavity, and the diagnosis of appendicitis made, with the appendix probably lying behind the cæcum. The patient was very collapsed, so the cavity was rapidly washed out and tubes inserted. The following day his condition had greatly improved, the pain had gone and a fæcal fistula had formed, but frequent and troublesome vomiting came on, though there were no signs of general peritonitis.

On the 29th the patient died, and at the *post-mortem* a condition was found for which I can give no explanation. There was no general peritonitis. The last 4 inches of the ileum were found firmly adherent to the false pelvis, and this was what perhaps had been mistaken for the appendix during the operation. The cæcum

was disorganised and its outer and anterior wall gangrenous and in places sloughed away. The small intestine opened into this cavity; no trace of the ileo-cæcal valve could be found, but there was a small intussusception, probably ileo-cæcal, about $1\frac{1}{4}$ inches long, funnel-shaped; the part projecting into the cæcum was very pale in colour, almost fibrous in character, and appeared to of long-standing duration. The appendix was found perfectly healthy, lying behind the cæcum. There were no signs of malignant or tubercular disease and no microscopical signs of Bilharzia in the bladder. Both kidneys were apparently healthy; the spleen was slightly enlarged. The diagnosis after the *post-mortem* is still a puzzle.

Abdominal Explorations. — (1) *Tubercular Peritonitis.* — A Sudanese soldier was admitted rather emaciated, suffering from a temperature varying from 100° to 101° F. and complaining of pain in his abdomen. A lump, very tender to palpation, was found in the abdomen in the region of the pylorus. No definite diagnosis was made. On October 10th Captain Black operated, and on opening the abdomen there was found general miliary abdominal tuberculosis, with some large, hard masses in the region of the pylorus, probably enlarged glands or caseous masses; there was no fluid and the abdomen was promptly closed. This operation relieved the pain altogether, the lump rapidly disappeared, being imperceptible to palpation a fortnight later; the man's general condition improved greatly and he was able to take his food in large quantities and enjoyed it, a thing he had been unable to do for some months previously. Curiously, his temperature, instead of improving, became higher, rising often to 102° F. at night, but his condition steadily improved, and he was able to go to his village, discharged at his own request. This is an interesting case in that this was the nodular and not the ascitic type, and the operation did wonders in the way of relieving pain and improving the general condition. Operations in such cases are, I believe, held by many to be of no use.

(2) *Typhoid Perforation.* — The patient was admitted on November 10th, with temperature at 104° F. There was no history of illness previous to the day of admission, no history of diarrhœa, and no splenic enlargement was noted. For three days he ran a temperature of 103° to 104° F.; no malarial parasites were found in the blood.

On the 13th his abdomen became distended and painful, but no definite physical signs were elicited and rectal examination was

negative. That night vomiting set in and his bowels were freely opened, but the pulse and respiration rates steadily increased in frequency, and the abdominal signs became more pronounced.

On the morning of 14th operation was undertaken and general peritonitis found, with a perforation about the size of a threepenny piece about 12 inches from the ileo-cæcal valve; this was closed by Lembert's sutures and the abdomen washed out, first with warm boracic lotion, and then with warm saline solution. Counter drainage was made through both loins and a tube placed in the abdominal incision. The patient was very collapsed and died thirteen hours later.

At the *post-mortem* the perforation was found perfectly closed and water-tight, and this was the only ulcer in any way advanced, though there were signs of slight ulceration in five or six different places. The specimen is now in the Gordon College Museum. This was evidently a case of ambulatory typhoid, and but for this one ulcer was of a very mild character, as far as ulcerative lesions were concerned.

Loose Body in Knee Joint.—A sergeant was admitted on account of pain in his left knee, with frequent attacks of synovitis following locking of his joint. A body could be felt to move about on the inner side, and it was thought to be a loose internal semi-lunar cartilage. One most striking feature about the case was the noise produced on walking, for the clicking at every step could be heard distinctly 15 feet away from the patient. The body could not be fixed before operation. A vertical incision about 3 inches long was made on the inner side three-quarters of an inch behind the patella. The semi-lunar cartilage was found fixed and healthy, but there was a large, thickened, white and almost cartilaginous protrusion from the alar ligament, in size about that of a sixpenny piece. Its base was ligatured with catgut, and it was removed, and the synovial membrane closed with similar sutures. The result has been perfect free movement, and I have seen him two months after discharge able to run and turn with perfect ease and with no recurrence of the old trouble.

Liver Puncture.—This can scarcely be called an operation, but the results were so wonderful that I think they are worth recording. The patient, an Egyptian gunner, had been ill with dysentery sixty-three days, and on November 20th his temperature rose to 103° F., and remained of a hectic type. He complained of tenderness in the region of the liver, and had pain in his right shoulder. The liver dulness was increased in size, there was marked tenderness

over the right side of the liver, and the right side measured three-quarters of an inch more than the left. There were no signs of any effusion into the right pleural cavity. No leucocytosis, and no malarial parasites were found in the blood. The pain was very severe and the temperature remained hectic till the 28th, and by this time the diagnosis of liver abscess seemed confirmed. On that morning all was made ready for an operation, and I needled him in about eight different places, but could find no pus. Thinking, under these circumstances, exploration further was unjustifiable, he was sent back to bed. The following morning his temperature was 100° F., and the pain gone altogether.

Two days later the temperature fell to normal and remained so, there was no recurrence of pain, the patient rapidly recovered and was sent away on sick leave. Perhaps this may have only been a coincidence, but the result of puncturing was so striking and immediate that I am of opinion that he was suffering from acute hepatitis, possibly prior to abscess formation, and that the irritation caused by so many punctures had a stimulating effect, possibly on the circulation, and so produced a cure.

Cavernous Angioma.—An Egyptian gunner, a recruit, strong but markedly anæmic, reported sick, complaining of a swelling on the left side of the neck, which he said was painful. The swelling extended from the manubrium in front to the spinous processes behind, from the mastoid above to just below the acromion spine. It was very soft, almost fluctuating, though nodular in parts, and in places the skin could be dimpled over it. There was no pulsation and no bruit. It was not tender to palpation. A lump about the size of a pigeon's egg was detected in front above the middle of the clavicle, and this was considered to be an enlarged gland. The diagnosis of lipoma was made, and as the patient did not wish an operation he was sent back to his battalion. About a month later he again reported sick, and the swelling appeared to be larger, and now some dilated venules were noted in the skin; his anæmia seemed more pronounced. The diagnosis was now considered to lie between nævo-lipoma, a vascular sarcoma or possibly hygroma. An incision was made about two inches long over the most prominent point behind, and was met with profuse bleeding; about a dozen Spencer Wells forceps had to be applied, and then some large venous channels as large as a lead pencil bulged into the wound, being connected with one another by very loose, spongy connective tissue. The vessels were ligatured off, and the wound closed, as it was considered too dangerous to proceed

further with the operation. The patient has now been invalided from the Service. This case seems worthy of record in that a cavernous angioma seldom reaches such an enormous size.

Lithotrity.—Captain Cummins crushed and removed a stone weighing 21 grains. This is remarkable in that it is the only case operated on for stone during the year, and yet stone is so common in Egypt. Renal colic and the passing of gravel is extremely common among the soldiers, and I have seen several dozen such cases, but in none of those that I have sounded have I been able to detect a stone in the bladder. My own opinion is that they are largely of bilharzial origin, and do not go on to form big stones.

Hæmorrhoids.—Two of these are of bilharzial origin, and the question which arises in these cases is how much to do, for such an extensive area is frequently involved, producing a general sponginess of the mucous membrane of the rectum.

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NOTE ON CARDIAC MURMURS AS A CAUSE OF UNFITNESS FOR SERVICE.

BY LIEUTENANT-COLONEL D. WARDROP.

Royal Army Medical Corps.

To senior officers of the Corps there is no question of greater importance in their day's work than that of deciding as to the invaliding or otherwise of soldiers with cardiac murmurs. To many the finding of a bruit means that its unfortunate possessor is to be immediately discharged from the Service. Their reasons for so doing have a certain amount of weight behind them. It is stated that once a man knows that he is the subject of a murmur, or "V.D.H.," as it is invariably expressed, he can get off any duty that he does not like; that he is unfit for active service; that no medical officer will pass him for the gymnasium, for physical drill, manœuvres, or any of those duties which requires him to pass that much over-rated and overdone medical examination.

Though I should be the last to advocate that men suffering from marked cardiac disease be retained in the Army, I am convinced that a large number of men yearly pass invaliding boards as unfit for further service, who have nothing apparently the matter with them beyond a bruit. A considerable number of these men are anxious to remain in the Service, and a large number might with advantage be retained to complete their period of service with the Colours and in the Reserve.

The question is one, of course, which is much open to criticism, and one of the difficult points that arises early in its discussion is to determine what amount of cardiac abnormality we could accept as not interfering with a soldier's usefulness. For some time past I have held the opinion that a mitral murmur with absolutely no other symptoms should be disregarded entirely, and that "V.D.H." should not be entered upon the patient's medical history sheet. In support of this view I would point out that it is an accepted fact that a systolic murmur at the apex, even when propagated to the axilla, need not always denote mitral incompetency. Osler states that a large group of sounds known as accidental murmurs exist in this locality, the exact origin of which has not yet been fully determined.

I am now inclined to go even a step further than this, keeping in view a large number of these cases that I have seen recently, and I would suggest that in certain cases where there may be some disease, but where compensation is perfect and the patient is in apparent good health and anxious to serve on, that he should be permitted to do so.

The prognosis in cases of valvular disease is in many instances

very favourable as to a capability of doing work, and good work, for a considerable period after definite signs of insufficiency have appeared. It all depends on the efficiency of the compensation established. As long as we have perfect compensation the patient suffers but little inconvenience, and many men are yearly sent out of the Service where this condition exists, and where the man is to all intents and purposes perfectly well, except that he has a murmur. How long this condition of satisfactory compensation persists is difficult to estimate. It varies, of course, according to the life led and to many other influences. Observers have, however, noted cases where it has been unchanged for long periods, even up to fifteen years.

In estimating the value of a cardiac lesion from a Service point of view, the most important point to consider is undoubtedly the valve affected. Aortic disease is certainly more serious than mitral, and although we have all met cases of this lesion where adequate compensation has existed for years, I am inclined to think that aortic disease fully established should be accepted as a disqualification for any further service. On the other hand mitral lesions are frequently associated with the most favourable prognosis. Many instances are recorded where patients, the subject of mitral insufficiency, have lived long lives after the disease has been detected, and the patients met with in the Army who are the subject of this lesion generally present a healthy appearance and frequently declare that there is nothing the matter with them.

The cry may be raised that we are breaking these men down, but I venture to assert that such is not the case. No man is more thoroughly cared for than the British soldier, and if at any time he should develop fresh symptoms it would be quite easy to bring him then before a Board. He would be, in any case, in a better position than if he had been invalided possibly a year or two previously. We do not always realise what we are sending a man to when we turn him out of the Army with cardiac trouble. He is often more or less friendless, work is difficult to obtain, and, when obtainable, is of a far more arduous description for a man of this class than is Army service. From any point we look at it on the man's side it is better that he should remain on if he is willing to do so. That a man should be willing to serve is of paramount importance, for once brand him with those three letters, "V.D.H.," and he will never work again if he does not want to—we have already taught him that.

On the side of the Service there are equal reasons why he should remain in the Army. He is trained, fully capable of carrying out all a soldier's duties, is a willing soldier, and from the fact that he

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knows that his heart is not quite normal, he will probably be a better man as regards his life generally. The only point against his retention is that at some future time he may break down. So may many others with perhaps sounder hearts. At any rate he might be retained for home service.

In this note I have not attempted to lay down any rules for the amount of disease or quality of bruit which would disqualify a man or the reverse. It is difficult to do so. It is more a matter of the application of special sense to individual cases as they arise. A standard of efficiency laid down in these cases would be a help, and might well go further than this class of disease. Why should a man who otherwise is a useful and zealous soldier be hunted out of the ranks because he occasionally has an epileptic fit? How many men in civil life are thrown out of employment for a similar cause? I venture to say not one; and yet a soldier's life is not more strenuous than most of those employed in factories and trades. We want a common-sense standard initiated in these matters, and a system introduced that will enable us to retain a number of men who are now being got rid of and thrown on the unemployed list.

This matter cannot be taken up solely by those on the administrative staff of the Army, as no good can result. A man is passed "Fit" by one Board, and shortly afterwards comes before a medical officer who holds a different opinion. Another Board is convened who accepts the good old dictum that no man with a bruit, or who has ever had a fit, can soldier, and the man is invalided. This is a more frequent occurrence, perhaps, than is generally known.

To do away, then, with excessive invaliding we must start at the beginning, and every medical officer must try and accept the fact that men can serve on, and serve well, who may be affected to some slight extent by cardiac lesions. One of the greatest mistakes we make is to educate men to the idea that they have heart disease. A common occurrence is to find that a young soldier, going up to pass for the gymnasium or for a short stay in the detention barracks, is rejected by the examining medical officer because he finds a murmur or some accelerated action. The first frequently means nothing, the second is probably due to too many cigarettes, but the result is that the man for the future believes that he has heart disease, and acts up to the belief. In either of these cases it could easily be arranged to sign the certificate and watch the man. I need hardly point out here that none of these remarks refer to cases of undoubted marked valvular disease; the only lesions under discussion at all are those where the disease is *not* marked, and these in my experience are by far the largest class of cardiac disease that we meet with in the Army.

REPORT ON FIFTY CASES OF OPERATION FOR APPENDICITIS PERFORMED AT THE MILITARY HOSPITAL, COLCHESTER.

BY MAJOR F. J. W. PORTER, D.S.O.
Royal Army Medical Corps.

THE question of the proper time for surgical intervention in appendicitis is at present rather a vexed one. I am a follower of those who advocate that *every soldier* should be subjected to early and complete operation as soon as a diagnosis is made with certainty. It is well recognised that, although many cases will recover in the hands of the physician, relapses are the rule. They may occur in the soldier at a time and in a place where operation is not possible, and may in consequence lead to a fatal termination. On this account it is, I think, advisable to regard this disease in the soldier from a different standpoint to that in the civilian.

A great many of this series of operation have been performed with the knowledge that one was dealing with a chronic form of this disease, and I readily admit that some of these cases would not have been considered sufficiently serious to have justified one in urging operation had they occurred in a civilian. The soldier has to perform a certain amount of work whenever he may be called upon to do so. He cannot lie up, or do his work in his own time and at his own pace, as a civilian can. If he is the possessor of a damaged appendix, with its resulting adhesions and periodical attacks of discomfort, it is only reasonable, I think, to offer him the relief which follows on a comparatively simple operation, and one which is practically unattended by risk.

As the bulk of these operations can now be done under local analgesia, or with the assistance of a very small amount of a general anæsthetic, I think it will be found that many men will come forward and ask for relief from a very disabling affection, as soon as the news spreads through a given regiment.

As regards the proper time for operation, the acuteness of the initial pain is a test of considerable importance, and I think cases commencing in this way usually demand immediate operation. The statistics of operation within the first forty-eight hours of onset, show that the mortality during this period is not higher than that of the interval operation, which is practically *nil*. If not

done during this period, it is better to wait (provided the signs and symptoms are subsiding) and do the interval operation.

I do not think it advisable to allow a soldier's appendix to give rise to more than one attack without subjecting its owner to operation, just as the law allows the dog to have one bite without subjecting its owner to liability to damages.

As regards the two cases in which the operation was performed while the patient was suffering from pneumonia, I would point out that there were no symptoms pointing to this disease. In both cases the abdominal symptoms were so marked as to leave no doubt as to the presence of grave trouble in the appendix. The pain was so exceedingly acute that even if one had known of the existence of the pneumonia, nothing short of immediate operation would have given relief. It would have been very unwise to have given morphia, and no other anodyne would have sufficed. This would only have masked the symptoms, and in the required dose would not have benefited the pneumonia. It also appears to me that a patient would be in a much better condition to stand the operation if done within the first few hours of the onset of the pneumonia than he would be later on, if it were found to be urgently needed. Local analgesia would simplify matters here. Pleuro-pneumonia affecting the right base, especially if the diaphragmatic pleura is involved, is very apt to give rise to pain which is referred to the iliac fossa. The question of urgency of operation would be decided by the presence of other symptoms, such as acute tenderness and rigidity.

Where drainage is necessary, there is no doubt of the superiority of gauze over rubber tubes. The former acts by capillary action, whereas the latter can only act when assisted by gravitation.

In the last thirty-nine cases, the operation was done through the split internal oblique and transversalis muscles. In only two was there any difficulty in getting at the appendix, and in these, sufficient room was obtained by dividing the muscles in the upper half of the wound. These cut fibres were sutured with kangaroo tendon. The skin incision in the latter cases was placed about one finger's breadth from the anterior superior spine, and measured about $2\frac{1}{2}$ inches. The incision through the external oblique just reaches the muscular fibres at the upper end. The internal oblique and transversalis are separated in the line of their fibres and the transversalis fascia, and sub-peritoneal fat and peritoneum then divided in the same direction as the internal oblique. If the incision be made in the position usually recommended, it will

traverse the transversalis *above* the muscular fibres and will go through aponeurosis. Tendency to hernia must, I think, be made much less by going through the muscle fibres, and it is much easier to get at the appendix in difficult cases at this spot. Moreover, the closer one places a scar to this point, the less strain there will be on it subsequently.

A rather large proportion of cases in which three or four ounces of the solution of eucaïne has been injected get chest complications. In some there appears to be a sort of broncho-pneumonia, and in others bronchitis. The temperature in neither case remains up for more than three or four days. I do not know whether the morphia which they get has anything to do with the production of these chest symptoms. Mr. Barker has written me to the effect that he does not think that chest complications are more common after eucaïne than after general anæsthetics; but unless the eucaïne has a definite action on the respiratory organs, there ought to be no chest complications at all. The symptoms are in no sense alarming, but it is well to know that they may be expected. In a few cases I have also noticed a sort of feeling of constriction over the præcordial region, lasting for two or three days.

In this series of cases there were only two appendix abscesses, viz., the first two, and they were admitted with this condition. Cases 3, 7, 8, 9, 11, 12, 16, 17, 18, 21, 24, 28, 35 and 47 would most probably have terminated in this condition, if immediate operation had not been performed. In some of these it is quite likely that the more serious complications of general peritonitis would have supervened. In any case, some resulting disability from adhesions, or ventral hernia, or recurrent attacks of appendicitis from failure to find and remove the appendix, would have followed delayed surgical treatment. Cases 3, 7, 8, 9, 11, 12, 16, 18, 21 and 24, in which very serious changes were found, were first attacks. These would seem to support the theory that immediate operation is the best course to pursue, provided the symptoms are very acute.

(1) Private J. No record of previous attack. Immediate operation. Large abscess cavity behind cæcum, with no adhesions shutting off the peritoneal cavity. Appendix not seen. Concretion of the size and shape of a cherry-stone came away in the drainage-tube four days after operation. Ventral hernia developed subsequently. Discharged to sick furlough sixty-four days after date of operation.

(2) Bombardier E. History of two previous attacks. Immediate operation. Large abscess cavity behind cæcum. Appendix not seen. Good deal of general peritonitis developed. Discharged to sick furlough thirty-six days after operation.

(3) Private E. No history of previous attack. Transferred from an out-station and operated on during interval. Tip of appendix adherent in Douglas' pouch and lying in small abscess cavity. Appendix removed. Drainage-tube. Discharged to sick furlough thirty-nine days after operation.

(4) Private W. History of three previous attacks, at intervals of three months. Fourth attack while in hospital for some other disease. Immediate operation. Appendix very long, tip bulbous, and contained a concretion. Discharged to sick furlough thirty-one days after operation.

(5) Private M. First attack three weeks previously, on furlough. Operation during interval. Extensive adhesions. Appendix was bent at a right angle, and its free extremity was very much distended. Discharged to sick furlough thirty-nine days after operation.

(6) Gunner D. History of six previous attacks. Operation during interval. Appendix very long, but appeared normal to naked eye. Discharged to sick furlough thirty-three days after operation.

(7) Sergeant B. First attack. Sudden intense pain at 8 p.m. Admitted and given morphia. Not seen by me until the following morning at 10.30. Immediate operation. Appendix gangrenous and perforated. Marked general peritonitis. Irrigation and drainage. Death five days afterwards.

(8) Sergeant T. First attack three weeks previously on furlough. Operation during interval. Tip of appendix was much expanded, was adherent deep in pelvis, and formed part of the wall of an abscess cavity. Gauze drain. A persistent sinus followed, and necessitated his being kept in hospital for sixty-one days after operation before it closed.

(9) Lance-Corporal S. First attack. Operation in quiescent period. Omentum adherent. Thick masses of yellow lymph round base of appendix, and its tip was adherent in iliac fossa. The base broke away close to the cæcum while being handled. Discharged to infectious hospital with German measles during convalescence.

(10) Private C. Second attack within four months. Operation during interval, but appendix still appeared inflamed. Discharged to sick furlough thirty days after operation.

(11) Gunner H. First attack. Immediate operation. Appendix very long, much inflamed, coated with lymph, and was twisted on its mesentery. Discharged to sick furlough twenty-eight days after operation.

(12) Gunner M. First attack. Immediate operation. Tip swollen, adherent, and coated with lymph. Discharged to sick furlough twenty-eight days after operation.

(13) Private B. First attack. Immediate operation. Appendix five inches long, much inflamed. Mucous membrane swollen and œdematous, and hæmorrhage had occurred into it in two places. Discharged to sick furlough twenty-seven days after operation.

(14) Sergeant A. Three attacks. Transferred from out-station after last for operation. Appendix very short, inflamed and bulbous. Discharged to sick furlough forty-nine days after operation. Stay in hospital was prolonged on account of a bedsore, which he had on admission.

(15) Private C. First attack one month previously. Operation during interval. Appendix very long, inflamed, and contained a large concretion. Vomiting and epigastric pain were so marked in this case as to cause gastric ulcer to be suspected. Discharged hospital twenty-four days after operation.

(16) Private L. First attack. Very sudden. Colicky pain chiefly referred to epigastrium. Much vomiting. Appendix easily felt through abdominal wall. Immediate operation. Appendix was as thick as one's thumb, quite rigid, full of pus, and its mucous membrane much ulcerated. There was a constriction about a quarter of an inch from its attachment. Discharged to sick furlough thirty-one days after operation.

(17) Private C. Third attack while in hospital for venereal disease; sudden onset. Immediate operation. Appendix very long, adherent by its tip in pelvis, and almost gangrenous. Discharged to sick furlough thirty days after operation.

(18) Private B. First attack. Sudden onset at 2.30 p.m. Reported sick at 11 p.m. Immediate operation. Appendix very short, full of pus, and had perforated at its base. The cæcum was adherent to the opening. Gauze drain for thirty-six hours. Discharged to sick furlough forty days after operation.

(19) Private P. Second attack. Immediate operation. Appendix much inflamed, and its mucous membrane very thick. Discharged to sick furlough forty days after operation.

(20) Private J. Several attacks, extending over two years. Appendix very long and still inflamed. Operation during interval. Discharged to sick furlough thirty days after operation.

(21) Private H. First attack. Extreme hyperæsthesia of skin over McBurney's point. Immediate operation. About six ounces of clear ascitic fluid escaped. Appendix very long, tense, coated with lymph, and its tip almost gangrenous. Gauze drain thirty-six hours. Discharged to sick furlough thirty days after operation.

(22) Private Y. First attack. Immediate operation. Appendix 7 inches long; much inflamed; black patch at centre. Discharged to sick furlough twenty-eight days after operation.

(23) Private A. Second attack. Immediate operation. Appendix much inflamed, and contained a long concretion. To sick furlough thirty days after operation.

(24) Private C. First attack. Reported sick three days after onset. Immediate operation. Appendix much disorganised and lay in an abscess cavity behind cæcum. Removed. Gauze drain forty-eight hours. To sick furlough thirty days after operation.

(25) Private B. Third attack. Operation during interval. Appendix bound down in pelvis by extensive adhesions. Discharged to sick furlough twenty-seven days after.

(26) Boy F. First attack. Operation during interval. Appendix much inflamed, about double its ordinary length, tip bulbous. To sick furlough after thirty days.

(27) Private W. History of constant pain and discomfort for past month. Operation during interval. Appendix very long, much inflamed, mucous membrane very swollen and congested. Several hæmorrhages into it. To sick furlough after twenty-six days.

(28) Lance-Corporal P. Second attack. Sudden onset six hours before admission, high temperature, acute pain and collapsed appearance. Immediate operation. Appendix was very thick and fibrous, and it was constricted about the centre. About 4 ozs. of clear ascitic fluid escaped when the peritoneum was opened. This man was found to be suffering from lobar pneumonia next day, and he evidently had this disease at the time of his operation, although his symptoms were undoubtedly those of acute appendicitis. To sick furlough after thirty-three days.

(29) Private W. History of never having been free from discomfort and tenderness over appendix for past six years. Operation during interval. Appendix was smaller than normal. Its lumen and lining membrane were quite normal for three-quarters of an inch from the base. At this point there was a complete stricture extending for about half an inch. Beyond this there was a small channel leading into a very diminutive tip. It appeared most probable that his symptoms had been caused by periodical distension of this diminutive appendix, and the contents being unable to escape, gave rise to appendicular colic. To sick furlough after twenty-nine days.

(30) Lance-Corporal L. History of repeated attacks extending over two years. Operation during interval under eucaïne and adrenalin. About thirty drops of chloroform were required to enable the appendix to be withdrawn from the abdomen. It was about twice the normal thickness, very congested, and had patches of lymph in two places. To sick furlough after thirty days.

(31) Lance-Corporal C. First attack. High temperature and very rapid pulse. Immediate operation under eucaïne and adrenalin. About one drachm chloroform was required as in the last case. Appendix was very long, much inflamed, and mucous membrane showed ulceration at one spot. To sick furlough after twenty-six days.

(32) Gunner J. Second attack. Operation during interval under eucaïne and adrenalin. No chloroform required. Many adhesions present and old changes in mucous membrane. To sick furlough after thirty days.

(33) Private W. Repeated attacks. Operation during interval under

eucaïne and adrenalin. No chloroform required. Marked signs of chronic inflammation present. To sick furlough after thirty-two days.

(34) Private C. Repeated attacks. Appendix could be easily felt through abdominal walls. Operation during interval under eucaïne and adrenalin. No chloroform required. Appendix much thickened and contained thread worms. To sick furlough after thirty days.

(35) Private D. Second attack. Sudden onset while a patient in hospital for venereal disease. Temperature 99·8° F. Pulse 148. Looked very ill. Immediate operation. Peritoneum bulged into wound and was much congested, and sero-pus escaped when it was incised. The appendix was covered with old lymph and extended upwards along the outer side of the cæcum. Some muscle fibres had to be divided in order to remove it. The abdomen was opened under eucaïne, and chloroform anæsthesia was subsequently given. To gonorrhœa ward after twenty-six days, for further treatment. Gauze drainage.

(36) Private B. Second attack. Operation during interval. Appendix very long, and its base had to be divided first. Extensive old adhesions present. The abdomen was opened under eucaïne and adrenalin, but A.C.E. had to be given to complete the operation. To sick furlough after thirty-nine days.

(37) Private M. Stated that it was a first attack. Sudden onset six hours previously. Intense pain over appendix. High temperature, very rapid pulse and a gray, pinched, abdominal appearance. Was thought to have an appendix which had perforated. Immediate operation. Signs of old adhesions round appendix. Found to have right lobar pneumonia next morning. This spread to the left lung after six days, and he developed pericarditis by extension. He died on the eighth day. He had no abdominal symptoms after the operation.

(38) Private G. Persistent discomfort and tenderness for past twelve months. Three definite attacks. Appendix could be easily felt through abdominal walls. Operation during interval, under eucaïne and adrenalin. No chloroform required. To sick furlough after thirty-three days. Marked signs of old trouble in appendix.

(39) Private P. History of two definite attacks, and of continuous discomfort for the past three months. Operation during interval under eucaïne and adrenalin. About one drachm chloroform was required in order to get the appendix outside. It was very fibrous and had no lumen for about one inch from its tip. There were very extensive adhesions present. To detention barracks to finish his sentence after thirty-five days.

(40) Private W. History of repeated slight attacks. Operation during interval under eucaïne and adrenalin. No chloroform required. Appendix thick, pale and fibrous. Mucous membrane only extended for about 1½ inches from the base, and from here to the tip the lumen was obliterated

and the organ converted into dense fibrous tissue. To sick furlough thirty-three days after operation.

(41) Lance-Corporal S. History of acute attack in civil life two years ago, when a surgeon wanted to remove the appendix. Has had repeated slight attacks since, and constant discomfort. Operation during interval under eucaïne and adrenalin. No chloroform required. Appendix very long and thick. Abundant old adhesions to the abdominal wall. Signs of chronic inflammation in the appendix. To sick furlough thirty days after operation.

(42) Sergeant E. Admitted at 9 p.m. with severe pain over appendix. Pulse 120. Temperature 103° F. Operation next morning under eucaïne and adrenalin. Appendix was very long, and contained three No. 6 shot. There were extensive adhesions all over the cæcum and appendix. First attack three weeks previously. To sick furlough thirty days after operation.

(43) Private H. Second attack. Operation under eucaïne and adrenalin in interval. Many old adhesions round the base, and the appendix was exceedingly long. Numerous small hæmorrhages into its mucous membrane. To sick furlough thirty days after operation.

(44) Private C. First attack. Appendix easily felt. Immediate operation under eucaïne and adrenalin. The organ was thick and fibrous and contained a fæcal concretion as thick as a slate pencil and about half an inch long. The attacks of colic would appear to be due to the efforts made by the appendix to expel this foreign body. To sick furlough thirty days after operation.

(45) Private F. Chronic appendicitis extending over seven months. Refused operation on admission, but changed his mind owing to the severity of his pain. The appendix was removed under eucaïne and adrenalin. It was very long and there were many adhesions at the base, bending it at an angle. To sick furlough twenty-eight days after operation.

(46) Private G. History of acute attack two years ago, which kept him in bed for three weeks. No attack until the present one, which was sub-acute. Operation under eucaïne and adrenalin. Appendix extremely short, tip bulbous, and about one inch from this there was a complete fibrous stricture about an eighth of an inch wide. To sick furlough twenty-eight days after operation.

(47) 2nd Lieutenant St. G. History of acute attack four years ago and of several slight ones since. Sudden onset, with rigor and tenderness; appeared to be spreading rapidly. Immediate operation under eucaïne and adrenalin. A few drops of chloroform required to get the appendix out. The peritoneum was much injected, and the skin was extremely hyperæsthetic. It was hardly a fair test for eucaïne on this account, and I do not propose to do such a case in future under it. Appendix much swollen, very livid, coated with old adhesions and very long.

Temperature same night 102° F., next morning 103° F., but rapidly fell to normal. Healed by first intention and still in hospital.

(48) Private B. History of sharp attack ten months ago. No symptoms until last ten days. Distinct tenderness. No temperature. Operation under eucaine and adrenalin. No chloroform required. Appendix retro-cæcal, and very difficult to withdraw. It contained two concretions, and the mucous membrane was studded with minute hæmorrhages. Two small ulcers were also present. Still in hospital.

(49) Private McG. Brought in collapsed on stretcher at 11 p.m. Sudden attack of pain same morning while at work. It wore off, but came on again in town and he had difficulty in getting home. Referred all his pain to præcordial region at first. Definite tenderness over appendix and history of inability to ride for past two months owing to dragging there. No temperature. Operation under eucaine and adrenalin. Unable to withdraw appendix at all, owing to adhesions, so base was dealt with first and the appendix gradually separated from behind the cæcum. A little chloroform was required for this. It was very long and contained three small concretions. Healed by first intention and is still in hospital.

(50) Private P. First attack. Operation during interval under eucaine and adrenalin. No chloroform required. I was unable to get more than the tip of the appendix into the ordinary wound. The organ was lying high up on the outside of the ascending colon, and was attached to the upper part of the cæcum on the outer side instead of in the usual place. The incision had to be extended upwards and the muscle fibres divided in the upper part of the wound. Numerous fresh adhesions were present, and the mucous membrane was studded with minute hæmorrhages. The parietal peritoneum was also much injected. Still in hospital.

SOME DISINFECTANT VALUES.

BY MAJOR C. E. P. FOWLER.

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THE writer of this article is fully aware that the subject discussed is a well-worn one, and his only excuse for bringing it forward is, that he appreciates how very ignorant the majority of medical men are as to the relative values of disinfectants; or even how little they seem to care whether the ones which they are using daily are of real value or not for the purposes employed. If the medical profession remain in this state of ignorance or apathy, then the general public must lack all reliable knowledge regarding these agents. This is undoubtedly the truth, and can it be wondered at? One has only to glance over the advertisement pages of any medical or even general paper, and one will have no difficulty in finding the virtues of several disinfectants set forth. Many of these are cleverly concocted puffs by professional advertising agents, who care nothing for the worth of the article which they boom, so long as the sale is enhanced by their clever tactics. There is no law regulating their sale. A man can put any worthless article on the market, and given that he spends enough on advertising its virtues, and that it is not unpleasant to sight or smell, the chances of his making money by its manufacture are great. As a disinfectant it may be of no value whatever. There are very many such on the market. How is the public to be guided, or protected from spending money on worthless articles? It is only natural they should believe that some of the vaunted virtues of the article purchased are really present. We all appreciate how great the need is for some legislation to stop the sale of rubbish and the defrauding of the public, but the difficulty of forming some standard on which legislation can be based has, up to now, proved the stumbling-block. People who know little of the subject cannot understand how great the difficulties are in arriving at this standard, or test, of the real value of a disinfectant, and have been inclined to jeer at the findings of the committees which have been formed to inquire into and report on the question. Again, there are others who press for the adoption of a certain method of testing and endeavour to cast ridicule on all others, because the method given will throw a favourable light on the particular article in which they may be interested. At the present day the commercial aspect has so greatly obscured the

scientific, that more care than ever has to be exercised before coming to any definite conclusions on a certain test or standard ; and its working in all practical details, and with all forms of disinfectants, needs to be most thoroughly worked out before adoption by the Legislature. The men conversant with all these points are chiefly the leading manufacturers or their advisory chemists, some medical officers of health, and others who are connected with such bodies as municipalities, and deal largely with disinfectants. To most medical men and to the general public the question is almost necessarily a closed one. There are probably few officers in the Corps who have had much opportunity of personally testing disinfectants ; and it has been suggested that a rough index of values found by us and others by a certain method might be of use as a working guide to any one when asked for an opinion on a certain disinfectant, or when about to test it. It might be well to state that the writer gives these various values in as fair and impartial a manner as possible, many of the agents having been tested at frequent intervals during the last four years, and the average figure struck for each. This statement is made because, from an article previously published, certain extracts were made by an enterprising firm of manufacturers which hardly tallied with the original text. These extracts, in the form of advertisement pamphlets, may have been seen by some readers. Another point which is worthy of mention is this : the value of a certain disinfectant found to-day, may by no means coincide with the value found in a few months' time. The reason is, that during the last few years, since the coal-tar series of disinfectants have been exploited, manufacturers have been keenly competing to keep their own special preparation at the head of the list ; in other words, of the greatest co-efficient value and just above that of their rivals. There are some half dozen firms placing a good coal-tar disinfectant on the market, having co-efficient values varying from 7 to 10 and upwards. Let us say that manufacturer A possesses one of 9. Naturally he wishes to have the best and so raises his co-efficient to 11. B, the owner of 10, thinks that he must not be left, so he, in retaliation, raises his figure to 12 ; and then, perhaps, C, the owner of the original 8, will go one better and put his up to 13. In this manner several firms have been competing, each endeavouring to outstrip their rivals. To what figure it may be possible for chemists to raise the co-efficient values is entirely problematical ; but it would appear common-sense to presume that a limit must soon be reached by the extra expense entailed in preparation to

gain the high figures. We believe that the attainment of a low figure, such as 2 or 3, is within the reach of all manufacturers of the coal-tar preparations, but to attain 13 to 20, or more, is of great difficulty, and only obtained by the employment of processes secret to the trade.

On account of these trade secrets not being divulged as public property, the ultra-scientific are wont to scoff at all preparations so made, and to deny any value to a proprietary article. Surely this anti-commercial spirit is a false one to take up? No one will deny that there are preparations now on the market of very great value for medical purposes, and to what do we owe their introduction and perfection? Commerce or science? You may answer, "To both," but there is little doubt that commercial enterprise has had by far the largest share in the elaboration of these valuable agents, backed up by the research work of manufacturing chemists. Now, why should not these men profit by their labours? If a certain article fulfils the claims of those who manufacture it, must it be condemned because its preparation is unknown to us? The labourer is worthy of his hire, and if a chemist devotes his life to evolving some idea and brings that idea to scientific fact and practical working, surely he should benefit as well as the public?

The desiderata for a disinfectant may be stated thus:—

(1) Germicidal action should be high and rapid. (2) This action should not be lost in the presence of organic matter. (3) Solutions or emulsions should be easily made with water. (4) The disinfectant itself and its various dilutions should be homogeneous and stable. (5) It should be non-toxic and non-caustic. (6) It should have no deleterious action on metals or fabrics. (7) Power of penetration should be considerable. (8) It must be cheap. (9) No unpleasant smell must be given off.

Now with regard to the first ideal on this list, how are we going to judge of the germicidal action? On this point there has been an enormous amount of thought and experimental work carried out, but no definite or settled means of standardisation has yet been fixed on. Many devices have been employed by different investigators, each of whom very naturally thinks that his own way is the best, and bases all his conclusions on the figures found by his own special method. To enumerate fully the methods and workers would be altogether outside the limit of this article, but mention may briefly be made of the ones best known.

Until within the last few years disinfectants were valued according to the percentage of phenols which entered into their composi-

tion, and this figure was worked out by chemical means. Such a procedure would now be quite valueless, for many of the most efficient germicides would show perhaps little phenol on analysis. The use of a disinfectant is to kill germs, and therefore on its efficiency for this purpose the standard or test of its value must be based. This fact is becoming universally recognised at the present day, and there are some ten Colonial and Foreign Governments, besides the War Office, Metropolitan Asylums Board, some twenty Boroughs and Corporations, and several large Railway Companies, which are now contracting for the supply of a disinfectant of a certain definite germicidal value as compared with phenol; and the majority require that the article shall be tested against *Bacillus typhosus* by the Rideal-Walker method.

Attempts to gauge the germicidal power of disinfectants were first undertaken by soaking threads in cultures of an organism, drying, exposing to the action of the disinfectant for certain periods of time, washing, introducing into suitable media and incubating. This is known as the "thread" method, and is still in use in some laboratories.

The objections to the method are: (1) The technique is very laborious; (2) on drying a hard crust is formed outside the thread; (3) length of time necessary for the disinfectant to penetrate the interstices of the thread, especially when hardened by drying; (4) difficulty in getting rid of all trace of disinfectant from the thread by washing, without also washing away any remaining bacteria.

The great advantage is that it tests the penetrative power of a disinfectant.

To obviate the difficulties of dealing with threads, what is known as the "garnet" method was then brought out by König and Paul. By this process selected garnets of uniform size are soaked in cultures, dried, exposed to the action of the disinfectant, washed, introduced into suitable culture media, and incubated. Objections similar to the thread method must also be applied to the garnet process. A crust of dried bacteria forms on the garnets, which takes some considerable time to soften, and when washing away the disinfectant one is very likely to wash all bacteria off as well. Most irregular and untrustworthy results have been reported by this method, and been fully confirmed by us. In 1903 what is known as the "drop" method was brought forward by Rideal and Walker. This consists in making a comparison of the germicidal efficiency of a disinfectant against a standard germicidal agent, such

as phenol. The dilution of phenol required to kill an organism in some definite time, is divided into the dilution of the disinfectant under examination that is able to kill the same organism in the same time, and the quotient is called the "phenol co-efficient." For example, say disinfectant A at 1 in 800 dilution kills *B. typhosus* in five minutes; and say phenol at 1 in 100 dilution kills this organism also in five minutes; then the phenol co-efficient of A is 800 divided by 100, which equals 8. In other words, disinfectant A is doing eight times the work of phenol, or is eight times as efficient as a germicide.

The advantages of this method are that the process is very simple to any one conversant with bacteriological technique, the conclusions are rapidly arrived at, and uniformity in results can be depended on after a little practice. Certain standard conditions must be enforced, such as (1) always to work with a twenty-four hours' broth culture, which should be well shaken so as to be free of clumps before use; (2) to make use of broth of reaction + 15 (Eyre's scale) and preferably made from meat extract; (3) experiments to be carried out between certain means of temperature, 60° to 70° F.; (4) the phenol used as a standard should be the purest, and carefully verified by titration with bromine.

Now with regard to the second desideratum, namely, that the germicidal action should not be lost in the presence of organic matter. It is a well-known fact that many disinfectants showing a high germicidal action on a laboratory culture emulsified in distilled water, lose nearly the whole of this power in the presence of organic matter. Therefore it stands to reason that whatever method is used, a control experiment should always be carried out with the addition of some organic matter. During the last two years a large number of experiments have been made in many laboratories, making use of various kinds of organic material, in the endeavour to find a substance, or mixture of substances, which can be added when diluting the disinfectant, in order to bring the conditions of experiment into somewhat similar lines to those met with in practice. Now the question arises, what amount of organic material does one meet with in practical disinfection? On the answer to this question depends the amount which it will be necessary to add in dealing with experimental work. In most cases for which disinfectants are required in medical practice, the amount of organic material present is not great, and it may be presumed that seldom would there be present more than 6 per cent. This on mixture with the disinfectant would be reduced to, say, 3 per cent., so that

if we allow 3 per cent. of organic material in our experimental work, we should be acting fairly in trying to gauge the practical value of that disinfectant. When it comes to the hopeless endeavour to sterilise stools, drains, sewers, &c., by chemical means, all idea of formulating any standard is out of the question. Disinfectants are not capable of undertaking such a task. In the case of a liquid stool, such as that from an enteric or dysentery patient, no disinfectant, however powerful, will sterilise that stool, unless most intimate mixture is brought about by prolonged stirring.

Regarding this question of the disinfection of stools, an extract from a paper lately published by Somerville and Ainslie-Walker is given, in which they state, "not a few have already recognised the impossibility of completely disinfecting fæces by chemicals. From 150 replies to a circular letter written by one of us to medical officers of health (county and borough), enquiring what proportion of the total disinfectants used in their districts was applied to fæces, it appears that 75 per cent. of these gentlemen do not attempt the disinfection of fæces, that cremation is used by 10 per cent., and that where disinfection by chemicals is attempted, less than 2 per cent. of the total disinfectants purchased is applied to fæces. . . . The percentage of disinfectants set aside for the sterilisation of stools at a number of Metropolitan hospitals is reported as follows: the London Hospital, under 1·5; Guy's Hospital, about 2; King's College Hospital, from 1 to 2; St. Thomas's Hospital, 0·7; Middlesex Hospital, 1; University College Hospital, 3 to 4 (including supplies used for general ward purposes)." Again, 3 per cent. of organic material has been found amply sufficient to bring down the values obtained by some disinfectants tested against pure cultures emulsified in distilled water. What happens if we increase the organic material? We find that the co-efficients are gradually lowered, until a point is reached at which all disinfectants come to one value or nearly so; that is to say, we have blotted out all differential values by the large amount of organic material employed. Surely by so doing we are losing the object of which we are in search, namely, a disinfectant which is stable in the presence of a reasonable amount of extraneous matter? On the other hand, it is quite granted that 3 per cent. or so of organic material may possibly favour the figure obtained for one class of disinfectant more than for others. This question of amounts is in hot dispute, and at present there seems little prospect of any standard being formulated owing largely to this disagreement of the various observers. For our own part we look upon about 3 per cent. as representing the figure of most practical working value.

The materials that have been made use of are chiefly—urine, fæces, milk, peptone, gelatine, mucin, blood, serum, casein, and pus, or mixtures of several. Urine and fæces are objectionable to use, but they have the advantage of simulating natural conditions, and further the natural *Bacillus coli* in the fresh material can be taken as the test culture. However, such material is not likely to be adopted as a routine procedure by the dainty, and the preparation is somewhat troublesome. A substitute has been put forward by M. Wynter Blyth in the shape of milk; he states that his results with a mixture of full and separated milk would somewhat approximate to those of fæces. This may be so when a large amount of fæces is used, not so with 3 per cent. Milk, by virtue of its fat and to some extent of its proteid content, is found to lower the coefficients of most disinfectants to very nearly the level of phenol. The other substances mentioned have been found to act on disinfectants with little difference when used in like proportion, and any one of them can be selected to make the 3 per cent. mixture.

That a control experiment, made with organic material, is absolutely essential in judging of the practical value of a disinfectant, cannot be too strongly insisted upon. Experiment made with a pure culture in distilled water is a rapid guide as to the "presumptive value" of a disinfectant; this value for practical working purposes must then be proved by testing its stability in the presence of organic matter. If it fails to show a moderate figure to the "presumptive test," it can be of no value as a disinfecting agent. If it shows a high figure to the "presumptive test," it may be valuable or not according to the retention of its power in the presence of organic matter.

With regard to the germ or organism employed as our test culture, which are we to select? At the present time the majority of observers are basing their conclusions on values obtained against *B. typhosus*. This organism offers itself as a useful test for several reasons. It is easily grown, forms a good emulsion, and is of medium resistance. The various strains may show a slightly different resistance to phenol, but the co-efficient will yield generally the same figure, thus differing from the strains of *B. coli*, which we know to give some trifling differences in value. *B. typhosus* has many well-known reactions, so that its identity can quickly be verified from time to time.

Regarding the employment of spore-bearing organisms as test cultures, we can give no recommendation. It is a well-known fact that spores of, say, *Bacillus anthracis* vary most widely in their

resistant power, depending on the age and toughness of the spore and on other factors, about which we know little. Many experiments have been carried out by us, but only with heart-breaking results, and the conclusion has been come to that no reliance can be placed on any results obtained with spores, until we have been able to evolve some means of arriving at their respective resistant powers under varying conditions. However beautiful may be the curve of results put forward, the advice given is to take them from the demonstrator with all due deference, but with a very large pinch of salt.

After all, do we need to make use of spore-bearing organisms to arrive at the practical value of a disinfectant? How often are we called upon to kill spores in actual practice? Very rarely indeed; in fact, disinfection of spores would only be required in cases of anthrax-infected material, and then the chance of destroying those spores in such material is a very slender one, even with strong solutions of the most powerful disinfectants.

In regard to the third requirement, namely, that solutions or emulsions should easily be made with water, practically all disinfectants possess it. The writer has come across one or two that will not mix with water, and their use would be *nil*. The question of solution or emulsion is one of great interest. It was observed by Ainslie-Walker that an active principle in a state of emulsion, possessed three times the germicidal value of that same principle in a state of solution. The physical state of the disinfectant principle is of the greatest possible importance in the manufacture of disinfectants. The explanation is unknown, but it would appear not improbable that in a condition of emulsion the minute globules are able to surround the bacteria with the active principle of the disinfectant in its pure state. A mixture of bacteria and highly diluted disinfectant emulsions can be stained and seen as above described, each bacterium having attached to it from two to a dozen minute globules of the emulsion. Nearly all the tar derivative preparations are sent out as solutions, but become emulsions on the addition of a trace of water, the size of the globules varying from one ten-thousandth to one-thousandth of a millimetre in diameter.

The fourth desideratum of homogeneity and stability is fulfilled by most disinfectants. It is most essential that they should remain homogeneous on standing in their pure condition, or, in other words, that no deposit of the active constituent should take place, but that it should remain distributed through the menstruum. Cans or

containers are often too large to shake before use. In the case of one very excellent disinfectant this fault is present; it separates in layers on standing; and whereas the original value may be 10, after a month at rest the top layer may show only 2, the second 4, the next 12, and the bottom 22, averaging the same as the original, but entirely separated. It can be seen that it would be a very unreliable material to use without first mixing. When diluted with water all emulsions have a tendency to deposit slightly on keeping, but in the majority this is of no material consequence.

The question of stability has caused some enquiry. Nearly all disinfectants are stable when kept carefully stoppered in the pure state. The only ones which are likely to deteriorate are those containing the halogens and their allies. The dilutions of most should be stable. You may see it averred that phenol in dilution will lose its strength. This is not a fact. Phenol dilutions kept by us and by others have been found, on titration with bromine, to have kept their strength for several years. Of course this applies to solutions kept in properly stoppered bottles; it is known that solutions when left exposed to the air will lose their phenol content. As regards those fluids which form emulsions, some deposit of the active principle undoubtedly takes place after prolonged standing. On being again thoroughly mixed the strength will differ only slightly from that of the original dilution. There is a loss in efficiency, but it is very small.

In reference to the fifth requirement, namely, that the disinfectant should be non-toxic and non-caustic, there is a wide divergence of value. It may be at once stated that no disinfectant exists, or is likely to be made, that will not be poisonous in the raw state, if taken in sufficiently large quantities.

When working dilutions are thought of, a broad line of differentiation can be made out. Whereas dilutions of the older disinfectants, such as perchloride of mercury and phenol, are toxic in small amounts, similar dilutions of the coal-tar derivatives can be taken with impunity. A like comparison can be also drawn when these agents are used for internal douching; many cases of poisoning have been noted after the use of perchloride of mercury and phenol, but there is no record of like symptoms produced by the coal-tar series.

The caustic effects of pure phenol and its strong dilutions are well-known, but the pure preparations of the coal-tars can be handled with impunity, the slight caustic effects being only appreciable when brought into contact with raw surfaces or sensitive mucous

membranes. When diluted for use, their caustic effects are almost negligible.

Number six requirement is that no deleterious action should be produced on metals or fabrics. Of the older disinfectants phenol fulfils this requirement, as do mercurial preparations for fabrics, but not so for metals, instruments, &c., being spoilt by immersion in their solutions. The newer disinfectants cause no damage to metals or fabrics, however strong may be the emulsions employed.

Number seven requires that power of penetration should be present. It would appear common sense to suppose that solutions must have greater power and rapidity of penetration than emulsions, the globules of which may become blocked in the fine interstices of clothing or other material. Experiment also bears out this supposition, and therefore by the "thread" method smaller phenol co-efficients will always be shown for all emulsions than those obtained by the "drop" method. This is one of the few disadvantages of the coal-tar series as compared with disinfectants in solution.

Number eight requirement, that the article must be cheap, aims the greatest blow at the newer disinfectants, which, at the present time, are all proprietary articles. Large profits are made by their manufacture, and it therefore seems reasonable to suppose that if their mode of preparation was generally known to chemists, in like manner to the preparation of soaps, their price would fall very largely. That this will come about in the course of time there can be no doubt. Each year brings more preparations on the market—not all of great value certainly, but with so many workers in the field it is not likely that the secret of their manufacture can long remain inviolate. At present their price is swayed by the amount of competition, but in any case they are cheaper to use than phenol, though dearer than mercurial preparations, a small amount of a mercury salt making a large quantity of disinfectant solution. It would be invidious to work out a comparative cost list, but this can be easily done by any one who is desirous of arriving at the relative costs of disinfectants for use on a large scale. The phenol co-efficient and the price of each must be known and a comparison is easily drawn.

The last desideratum, that no unpleasant smell be evolved, is answered by all disinfectants. This is largely a matter of personal liking and dislike. Some people strongly object to the smell of phenol, others like it. Most of the new disinfectants have a slight odour of tar or creasote, but it will only be found fault

with by the most fastidious. They have not the deodorant powers possessed by some of the halogen preparations, which will obscure almost any odour largely by virtue of their own pungent smell.

A word may now be said with regard to the so-called disinfectant powders. Most of those on the market are of little value and simply act as deodorants. Even the best are not worth their cost. And surely we have no need to use such powders in the Service. Do we keep our "offices" in such an indifferent condition that they need the smell emanating from them to be covered by some deodorant? We hope not. Therefore why waste money on the use of such mock disinfection?

With reference to the following table it may be noted under cyllin that the selective germicidal action of disinfectants is well brought out. The same rule applies to nearly all. It shows the importance of always working with the same organism when testing the comparative values.

Under mercury: from a large series of experiments with mercurial preparations it has been found that no reliance can be placed on any definite co-efficient figure. Most divergent results have been obtained. Those given are average ones, but by no means warranted as correct. It will be seen that the figures found by us differ widely from those given by other observers.

RESULTS OBTAINED BY THE "DROP" METHOD, MOSTLY ACCORDING TO THE RIDEAL-WALKER ORIGINAL TECHNIQUE.

Name of disinfectant	Date of Experiment	Organism employed	Phenol co-efficient
Absolute alcohol (Fowler)	8.05	<i>B. typhosus</i>	0.03
Antiseptol (Ainslie-Walker)	10.05	"	2.5
" (F.)	2.06	"	1.8
Antozone (F.)	2.06	"	0.02
Andesol (A. W.)	8.03	"	0.2
Acetozone, sat. aq. sol. (A. W.)	10.03	"	0.05
Aniodol (A. W.)	4.04	"	0.01
Acme fluid (Robertson)	1.06	<i>B. coli communis</i>	3.3
Alphozone (A. W.)	3.05	<i>B. typhosus</i>	0.8
Bacillol (A. W.)	5.04	"	1.25
Boric acid (A. W.)	10.04	"	0 (?)
Boots' fluid (A. W.)	1.05	"	3.0
Bishop's fluid (A. W.)	7.05	"	2.0
Bond's fluid (A. W.)	6.05	"	2.0
Battle's fluid (A. W.)	5.06	"	2.0
Bactox (A. W.)	5.06	"	1.2
" (Robertson)	6.06	"	2.7
Carboline (A. W.)	7.05	"	1.0

RESULTS OBTAINED BY THE "DROP" METHOD.—Continued.

Name of disinfectant	Date of Experiment	Organism employed	Phenol co-efficient
Carbolacene (Robertson)	5.06	<i>B. coli communis</i>	0.5
Cooper's fluid (A. W.)	11.05	<i>B. typhosus</i>	3.0
Clyptas (A. W.)	8.06	"	0.3
Chinosol (A. W.)	11.03	"	0.3
" (F.)	7.04	"	0.15
Creolin, Pearson's (A. W.)	12.03	"	2.5
Chloros (F.)	1.04	"	21.0
"	7.06	<i>B. coli communis</i>	20.0
" dilutions made with 50 per cent. urine (F.)	7.06	<i>B. typhosus</i>	8.0
" dilutions, all urine, mixed one hour before experiment (A. W.)	1.04	"	0.8
" dilutions, 3 per cent. organic matter, one hour before experiment (A. W.)	1.07	"	0.1
" dilutions made with 50 per cent. full milk (F.)	7.06	"	1.0
" (F.)	11.06	Fæces 5 per cent. in urine (natural coli)	1.5
Cresoline (A. W.)	2.04	<i>B. typhosus</i>	1.0
Copper sulphate (A. W.)	6.04	"	0.04
Camphenol (A. W.)	10.04	"	2.0
Creocide (A. W.)	10.04	"	3.2
Cinnamate of soda (A. W.)	10.04	"	0.12
Cannon's fluid (Robertson)	10.05	<i>B. coli communis</i>	3.0
Carbolic fluid No. 5 (Robertson) ..	5.06	<i>B. typhosus</i>	4.0
Crephol (Robertson)	4.06	<i>B. coli communis</i>	3.7
Cyllin (F.)	12.05	<i>B. typhosus</i>	11.0
"	4.06	"	12.0
"	11.06	"	14.0
" after standing in tall glass one month, top layer—original 12 (F.)	4.06	"	12.0
" dilutions, 50 per cent. urine (F.)	5.06	"	11.0
" (F.)	5.06	Fæces 5 per cent. in urine (natural coli)	6.5
" dilutions, 50 per cent. separated milk (F.)	5.06	<i>B. typhosus</i>	4.5
" dilutions, 50 per cent. full milk (F.)	5.06	"	2.0
" (Klein)	5.05	<i>S. pyogenes aureus</i>	9.3
" (Hewlett)	6.06	<i>B. pestis</i>	34.0
" (F.)	11.06	<i>B. coli communis</i>	11.5
"	7.05	<i>B. cholerae asiatica</i>	23.0
" (Sommerville)	7.05	<i>B. diphtheria</i>	20.0
"	7.05	<i>B. dysenteria</i>	10.0
" (Klein)	3.07	Meningococcus	54.0
"	1.06	<i>B. tuberculosis</i>	11.0
" (F.)	6.06	<i>B. prodigiosus</i>	11.5
Dusseck's fluid (A. W.)	10.03	<i>B. typhosus</i>	1.0
Eucryl fluid (Robertson)	2.05	<i>B. coli communis</i>	2.7
Eukotas (A. W.)	9.05	<i>B. typhosus</i>	0.1
Esset's fluid (A. W.)	2.04	"	1.5

RESULTS OBTAINED BY THE "DROP" METHOD.—*Continued.*

Name of disinfectant	Date of Experiment	Organism employed	Phenol co-efficient
Eucalyptane (A. W.)	10.03	<i>B. typhosus</i>	0.4
Formalin (Laing)	5.06	"	0.25
" (F.)	3.05	"	0.7
"	11.05	Fæces 5 per cent. in urine (natural coli)	0.7
Feneline (A. W.)	3.03	<i>B. typhosus</i>	0.5
Fletcher's fluid (A. W.)	6.06	"	2.5
Formic acid (A. W.)	4.04	"	2.0
Glycerine (A. W.)	1.04	"	0.0
Germinol	4.04	"	0.1
Germocene	8.05	"	1.3
" Glen " carbolic fluid (A. W.)	3.04	"	1.5
Hayward's fluid (A. W.)	7.04	"	3.0
Hydrochloric acid (A. W.)	2.05	"	11.0
" .. (F.)	11.05	Fæces 1 per cent. in urine (natural coli)	1.5
Heydozone (A. W.)	4.06	<i>B. typhosus</i>	0.1
Hygeoline (A. W.)	3.06	"	0.25
Iodi, Tr. B.P. (F.)	8.05	<i>B. prodigiosus</i>	18.0
"	12.06	<i>B. coli communis</i>	13.5
" dilutions urea 1 per cent. (F.)	1.07	"	4.0
" (F.)	11.05	Fæces 1 per cent. in urine (natural coli)	0.5
Ichthyol (A. W.)	2.04	<i>B. typhosus</i>	0.5
Izal (F.)	10.05	"	10.0
"	3.06	"	11.0
" dilutions with 3 per cent. organic matter (A. W.)	2.07	"	6.2
" after standing in tall glass one month, top layer (original 11) (F.)	4.06	"	4.0
" (F.)	5.06	Fæces 5 per cent. in urine (natural coli)	4.0
Izal dilutions 50 per cent. separated milk (F.)	5.06	<i>B. typhosus</i>	2.5
Killgerm fluid (A. W.)	9.03	"	2.0
Kresophen (A. W.)	7.05	"	2.3
Kreazole (F.)	12.06	"	3.0
Kerol (F.)	12.05	"	10.0
"	3.06	"	10.0
"	9.06	"	12.0
" dilutions urine 50 per cent. (F.)	8.06	"	8.5
" full milk 50 per cent. (F.)	11.06	"	1.7
" (F.)	11.06	Fæces 5 per cent. in urine (natural coli)	6.0
Listerine (A. W.)	6.03	<i>B. typhosus</i>	0.03
" (F.)	8.05	"	0.03
Lysoform	11.03	"	0.1
Lozar (A. W.)	2.04	"	0.5
Laurenol (A. W.)	2.04	"	0.09
Lawes' fluid (A. W.)	1.04	"	1.75
Liquozone (A. W.)	7.03	"	0.15
Little's Phenyle (A. W.)	5.04	"	2.0

RESULTS OBTAINED BY THE "DROP" METHOD.—*Continued.*

Name of disinfectant	Date of Experiment	Organism employed	Phenol co-efficient
Lysol (F.)	8.05	<i>B. typhosus</i>	2.0
" "	2.06	" "	2.5
" "	11.05	Fæces 1 per cent. in urine (natural coli)	2.0
Methylene blue (A. W.)	7.03	<i>B. typhosus</i>	1.5
M.D. fluid (white) (A. W.)	1.04	" "	0.0
" " (black) "	"	" "	0.6
Major's fluid (A. W.).. .. .	2.04	" "	4.0
McDougall's fluid, No. 5 (A. W.)	2.03	" "	3.0
" " No. 9 "	2.03	" "	1.2
Mykrol (A. W.)	6.03	" "	1.2
Microbine (A. W.)	5.06	" "	1.5
Mallein's fluid (A. W.)	11.05	" "	1.5
Mercuric chloride (F.)	8.05	" "	2000.0 (?)
" " " "	8.05	" "	1000.0 (?)
" " " "	11.06	<i>B. coli communis</i>	1500.0 (?)
" " (A. W.)	8.05	<i>B. typhosus</i>	400.0
" " (Laing)	5.06	" "	25.0
" " NH ₄ HS added to subculture tubes (A. W.)	8.05	" "	20.0
" " 1 part, and HCl 2 parts (F.)	1.07	Fæces 5 per cent. in urine (natural coli)	350.0 (?)
Mercuric iodide (F.)	8.05	<i>B. typhosus</i>	1000.0 (?)
Nobes' fluid (F.)	8.04	" "	0.2
Oleusaban (F.)	8.05	" "	0.08
Okol (Wynter-Blyth)	1.07	" "	22.0
" (F.)	2.07	" "	11.0
" " " "	2.07	" "	8.0
" dilutions with peptone 3 per cent. (F.)	2.07	" "	6.0
Phenyle (A. W.)	5.04	" "	2.0
Petol "	7.03	" "	0.0
Puritas "	4.06	" "	4.0
Phormal (A. W.)	4.06	" "	0.03
Pearson's fluid (A. W.)	2.03	" "	2.6
Platt's chlorides (A. W.)	9.03	" "	0.04
Phenol, Calvert, No. 4 (F.)	2.06	" "	1.2
Pyrozone (A. W.)	10.03	" "	0.03
Potass. permanganate (F.)	8.05	" "	42.0
" " " "	11.05	Fæces 1 per cent. in urine (natural coli)	7.0
" " dilutions 3 per cent. organic matter one hour before experiment (A. W.)	1.07	<i>B. typhosus</i>	1.0
Pino-phenol (F.)	12.04	" "	2.5
Radium (Robertson)	11.05	<i>B. coli communis</i>	2.8
Radam's microbe killer (A. W.)	1.04	<i>B. typhosus</i>	0.07
Rowan's fluid (A. W.)	6.05	" "	0.4
Soda salicylate "	7.03	" "	0.07
Soldis "	10.05	" "	0.6
Sapo-phenol "	12.05	" "	1.3
Sanitine "	10.05	<i>B. coli communis</i>	2.5
Soda phenique "	11.03	<i>B. typhosus</i>	0.1

RESULTS OBTAINED BY THE "DROP" METHOD.—*Continued.*

Name of disinfectant	Date of experiment	Organism employed	Phenol co-efficient
Septoforma (A. W.)	8.06	<i>B. typhosus</i>	0.3
Sulpho-naphthol (A. W.)	11.03	"	2.25
Sea-water electrolysed (A. W.)	12.05	"	0.2
" dilutions all urine (A. W.)	12.05	"	0.01
Sanitas (Laing)	7.05	"	0.02
Snowdol, A. (F.)	11.06	"	12.0
"	12.06	<i>B. coli communis</i>	8.5
"	11.06	Fæces 5 per cent. in urine (natural coli)	6.0
Snowdol, B.	11.06	<i>B. typhosus</i>	6.0
"	11.06	Fæces 5 per cent. in urine (natural coli)	4.0
Thymo-cresol (A. W.)	12.05	<i>B. typhosus</i>	1.5
Tarolene (A. W.)	11.06	"	1.0
Traumatol (A. W.)	9.03	"	0.2
Theropogen (A. W.)	2.04	"	0.4
Taylor's fluid, A. (Robertson)	10.05	<i>B. coli communis</i>	3.7
Visanus (A. W.)	5.06	<i>B. typhosus</i>	2.5
Young's fluid (F.)	3.06	"	2.0
Zinc sulphate (A. W.)	7.03	"	0.02
" chloride (A. W.)	1.06	"	0.15
Zotal (A. W.)	2.03	"	1.3

Clinical and other Notes.

MEDITERRANEAN FEVER: INFECTION IN UTERO.

By MAJOR E. M. WILLIAMS.

Royal Army Medical Corps.

DURING the course of their investigations the Mediterranean Fever Commission have ascertained the fact that a pregnant goat suffering from Mediterranean fever can communicate the disease to the young in utero, the blood of the kid reacting to the disease for some considerable time after its birth. So far no opportunity has occurred, until the present case came under treatment, in which this fact could be observed in the human being.

The history of the case is as follows: Mrs. A., aged 30, multipara, seven years in Malta, with no history of a previous illness, was admitted to the Military Families' Hospital on May 12th, 1906, suffering from Mediterranean fever, for which she had been treated in her quarters for about fourteen days. Her serum was tested and reacted at once to a dilution of 1 in 50. Her temperature before admission was of a fairly mild type, being only 99·2° F. on the day of admission, and it remained practically normal till May 31st, when there began an evening rise, the height of the "wave" culminating on June 25th.

The patient, at the time of her admission, was eight months pregnant. She was confined at 12.15 p.m. on June 24th, the labour being normal in every respect, the weight of the infant being 9½ lbs. On June 25th the midwife thought the infant was feeling very hot, and on taking its temperature found it to be 103° F. Otherwise the infant appeared to be quite well, taking and sleeping well. The child's serum was tested twice, on June 26th and 28th, and did not react to 1 in 50, but on the 29th it reacted to a dilution of 1 in 500.

A small quantity of colostrum was drawn off into sterilised tubes and tested, when it reacted at once to *Micrococcus melitensis*, and when plated, colonies of the Micrococci were found.

Practically speaking, there was no contact between mother and infant after its birth, as, owing to the mother's condition, it was not put to the breast, but was fed and looked after in a separate ward. The mother volunteered the statement that on the night of May 31st she was kept awake nearly all night by the violent movements of the child. As this date corresponds to the commencement of the second "wave," it may very probably mark the date of infection of the child in utero.

As the period of infection of Mediterranean fever appears to be a

lengthy one, it seems highly improbable that the infant was infected after birth.

I have to thank the members of the Mediterranean Fever Commission for their assistance in investigating the above case.

INGROWING TOENAIL.

BY LIEUTENANT-COLONEL J. J. GERRARD.

Royal Army Medical Corps.

ONE is very loth to add anything to the already voluminous literature on this subject, but it has been suggested that a note on the method I am in the habit of using might be of interest.

Most men have some particular method which they believe in, and the methods are as many as the men. Avulsion of the nail, cutting out V-shaped or semilunar pieces, paring away the side of the nail, freezing and shaving off the granulations from the ulcer, and so on, one of the latest I have seen being to take away a strip of the nail and to destroy the matrix, and so prevent its regrowth.

They are all very good methods, and have proved successful in their user's hands, but they are all, to my mind, based on a wrong principle, and all necessitate lengthened treatment. In all of them the treatment is directed primarily to the nail, which is considered the offending part. This appears to me to be unsound, and to be a negation of the surgical principle of treating and removing the cause of an ailment.

Ingrowing toenail is a misnomer; the nail does not "grow" in. The part the nail plays is a purely passive one. The offending part is the second toe, which is pressed up against the inner side of the great toe. The great toe gives way as much as it can, as is shown by the hollow which is always present; but along a certain line it cannot give way, as the edge of the nail is opposing it on the opposite side. The result of this counter-pressure is the formation of the ulcer. The ulcer, then, is produced, firstly, by the pressure of the second toe, and, secondly, by the irritation of the edge of the great toe nail.

It is obvious, therefore, that treatment should be directed to removing these two causes; and this is done by inserting a pad of wool in the cleft between the great and second toes, and by introducing a small strip or a few strands of lint under the edge of the nail, and between it and the ulcer. This is easily done with the flat end of a probe after the application of a little cocaine. I find the ulcer heals and the trouble disappears in three or four days. The patient should continue to wear a pad of wool between his toes so as to prevent a recurrence. Men soon learn how to treat themselves, and whenever they feel any soreness about the toe to put in the pad of wool again and a piece of paper, lint, or linen, under the edge of the nail.

A CASE OF NEW GROWTH OF THE CEREBELLUM.

BY LIEUTENANT A. A. SUTCLIFF.

Royal Army Medical Corps.

THE patient, E. C., age about 41, was admitted to Netley October 26th, 1906, with the diagnosis "non-malignant new growth of brain, probably of cerebellum."

The Following History was Elicited.—The family history was unimportant, while the patient himself had been a more than usually healthy man. He was home from the East two years ago and was then a very smart soldier. He was a Sergeant-Major, and had no history of, or signs of having had, venereal disease. His present trouble commenced at Nagpur, Bengal, about Christmas, 1905. At first there was severe frontal headache and giddiness, the latter being so marked that the patient was unable to stand. At this time vomiting was severe and persistent, and the pulse very slow. There was also incoordination, and very indistinct speech. The treatment was antisypilitic. A medical board held at Fort William recommended change to England, and the patient was shipped as a cot-case on H.M.T. "Assaye," for transfer to Netley.

State on Admission to Netley, October 26th, 1906.—A fairly well-nourished man of 41, quite unable to stand upright; mental condition very dull, and cerebration slow; speech slurring and indistinct; knee jerks present, equal and exaggerated; pupils react normally, both to light and accommodation; nystagmus present; no ankle or patellar clonus; Babinsky's sign is very easily elicited, very marked and bilateral; cranial nerves are normal, allowing for feebleness of intellect; no tremor of any kind, intention or otherwise; optic neuritis present; no control over sphincters; chest, abdomen and urine normal. Incoordination is not marked; patient can readily approximate his forefinger tips with his eyes closed. Pulse very slow, temperature and respiration normal. Patient was put to bed on a milk diet with reasonable extras, and a mixture containing potassium iodide given.

Progress of Case.—For the first few days no change was apparent. Early in November the headache returned, being very severe, frontal in position and intermittent; it was treated by means of an ice-bag and phenacetin and citrate of caffeine. Patient's condition got gradually worse till about the middle of November, 1906, when his pupils ceased to react to light, though the accommodation reflex was still present. The mental condition was worse than ever, and an increasing difficulty in feeding became noticeable. This was apparently due to paresis of the palate and pharynx, and was specially urgent in relation to liquids. Minced chicken was accordingly substituted for milk diet, and for a time the difficulty was overcome. Constipation appeared about this time and was treated by aperients and occasional enemata.

On November 13th, 1906, patient's pupils again reacted to light, and

he commenced to improve; he recognised his relations and spoke intelligently to them, but the pulse now became very much accelerated (114), and was rather weak. The pupils ceased to react to light again on November 28, 1906, but the mental improvement persisted.

On December 4, 1906, patient's condition became much worse, the headache returned, and from now onwards convulsive attacks occurred. These lasted for from one to three minutes. During these the respiration was stertorous, face congested and muscles rigid. They were treated by means of oxygen inhalations when possible, but were usually over before any treatment could be carried out. Amyl nitrite and chloroform were considered, but the pulse was too poor to take any risk that could be avoided. The diet was altered to plain milk and the feeding cup with short tube used, with poor results.

On December 6th the fundi were again examined by Captain Gill, R.A.M.C., who reported "Extremely well-marked optic neuritis present." On the same day the reflexes were again taken; Babinsky's sign elicited as before; knee jerks both present though difficult to obtain; accommodation reflex perfect, light reflex present but very sluggish.

An extract from the notes at this time is as follows:—"The case is apparently one of slow-growing tumour of the cerebellum, which is slowly affecting, by pressure or direct extension, the medulla and pons. This would account for the paresis of palate and pharynx, and the undue stimulation of the vital centres in the medulla would account for the respiratory and cardiac symptoms. There is considerable bronchitis, making a steam-kettle necessary."

The patient died at 2.30 a.m., January 7th, 1907.

Latterly, respiration approximated to the Cheyne-Stokes' type. Strychnine and oxygen were freely used during the close of the case, as well as alcohol. At no time was pyrexia marked; 101.2° F. was the highest temperature charted, and occurred on the day before death.

For the *post-mortem* report I am indebted to Captain Babington, R.A.M.C., pathologist at Netley. Appearance thirty-three hours after death.—*Rigor mortis* well developed. *Post-mortem* lividity present. The brain alone was examined. The meninges show no well-marked pathological changes. Cerebro-spinal fluid is increased in amount. Inspection of the base of brain shows that the interpeduncular space forming the floor of the third ventricle is distended with fluid. The right side of the cerebellum appears to be larger than the left. While examining the cerebellum about six drachms of clear fluid escaped from a cyst occupying the right lateral hemisphere. The fluid is amber yellow in colour. On section, the right cerebellar hemisphere is occupied by a cyst, which extends also into the median lobe. The cyst is about the size of a small hen's egg, and has a wall about a quarter of an inch in thickness. For the greater part it is smooth internally, but in places has a rough, tuberculated appearance. The cyst wall is very friable and can

be separated easily from the surrounding brain substance. The latter is not invaded. The third and lateral ventricles of the brain are very much distended from the pressure of accumulated cerebro-spinal fluid. On microscopic examination the tumour showed the characteristics of a cliosarcoma which had undergone cystic degeneration. Very little infiltration of the surrounding brain substance was seen. In a section stained by Van Gieson's method the fibrous tissue of the tumour was seen to be rather scanty in amount, and the walls of the blood-vessels showed signs of degeneration.

The following seem to be the points of interest exhibited by the above case:—At one time there was a suspicion that the true explanation might be general paralysis of the insane. This was based on the presence of slurring speech, sluggish pupils, seizures and stertor, coupled with bladder and rectal troubles. The absence of any specific history of any tremor of the tongue or lips, and the presence of well-marked papillitis, caused the abandonment of this idea. The classical features of brain tremor, headache, vomiting and optic neuritis, all appeared during the course of the case, though they were not all present at the same time. Attention was directed to the cerebellum as the site of disease by the following considerations. There was absolute inability to stand, and yet coordinated movements were tolerably carried out when the patient was prone. Nystagmus was present and the knee jerks retained, both signs described in pure cerebellar lesions, while the cerebral cortex was apparently sound, as there was no actual paralysis except of the sphincters, and the patient's intellect, though usually dulled, was fairly good at intervals. This condition could hardly have occurred in the presence of any gross lesion of the intellectual or motor areas of the cerebellum. Two points which might have been expected to occur never actually did so: Glycosuria and hyperpyrexia, due to injury to the medulla. Other signs of injury in that locality, presumably due to pressure, did occur. These were: The speech affection due to the involvement of the hypoglossal nucleus, and the paresis of palate and pharynx, and the stertor.

AN UNUSUAL CASE OF FEVER.

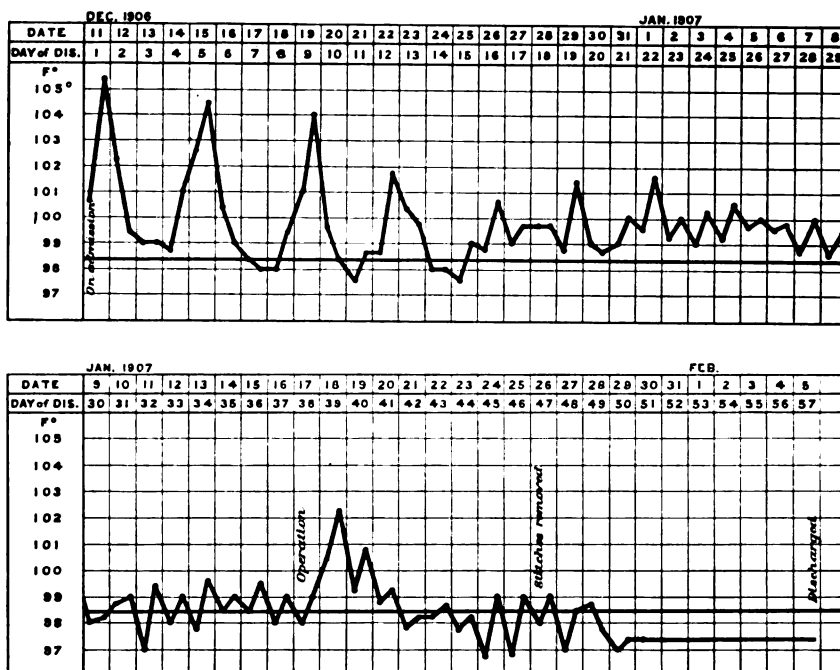
By MAJOR T. B. BEACH.

Royal Army Medical Corps.

CORPORAL M., Army Service Corps, aged 23, service five years, was admitted to the Military Hospital, Chatham, on December 11th, 1906.

On admission he complained of slight headache and muscular pains, and his temperature was 100·6° F., rising to 105° F. the same evening. At this time a good many cases of influenza were being admitted, and it was thought that he was probably suffering from that disease, as he showed no symptoms of pneumonia or other acute illness. But the course

of the temperature soon showed that he was not suffering from influenza. As may be seen in the chart, it ran a markedly periodic course, with an interval of three days between the gradually decreasing exacerbations of fever. Malarial infection was naturally thought of, but the man had never been abroad, and it could not be made out that he had been brought in contact with mosquitoes at home. Moreover, his blood, on examination, was found to be quite free from malarial parasites. On further examination the blood serum was not found to react to enteric or Malta fever. As the leucocytes were relatively increased, search was made for any source of suppuration, but none could be found in the liver or elsewhere.



Except for ordinary febrile malaise during the exacerbations, the man seemed in perfect health, with a clean tongue and a good appetite. Throughout the illness he remained strong and well nourished.

He was given quinine in large doses, and also arsenic and iron, but none of these drugs appeared to have any marked effect on the disease.

It had been noticed that there was a mass of enlarged glands in the left groin. The enlargement was quite indolent and painless. He denied any venereal disease, and there was no record of any on his medical history sheet, nor any signs of such about him. He attributed the glandular enlargement to a strain while riding. In the absence of any

other visible cause for his fever, it was decided to remove these glands, although they were not suppurating or giving rise to any discomfort. Two large glands were accordingly enucleated. They were both hard and fibrous, and each about the size of a pigeon's egg. One was very deeply seated near the external abdominal ring, and was removed with some difficulty. The wound was stitched up and healed by first intention. The little operation was done under local anæsthesia with eucaïne and adrenalin, with absolute freedom from pain. On section the glands were found to be hard and fibrous, and there were no signs of breaking down of tissue in them. There was a rise of temperature on the day following the operation; this soon subsided, and he was sent on a month's sick furlough on February 5th quite free from all fever.

Apparently the two enlarged glands were the cause of the unusual type of fever in this case, as no other cause could be found, and the fever ceased soon after their removal. This case seems to be of interest, as such a type of fever is not often seen in cases of non-suppurating lymphatic glands.

The blood examinations were very kindly carried out for me by Lieutenant-Colonel Cecil Birt, R.A.M.C., at Millbank.

A CASE OF ACUTE GENERAL PERITONITIS FOLLOWING ENTERIC FEVER; OPERATION; RECOVERY.

BY MAJOR F. E. GUNTER AND CAPTAIN G. F. SHEEHAN.

Royal Army Medical Corps.

PRIVATE D., 19th Hussars, aged 19, service one year and three months, was admitted into the Military Hospital, Curragh Camp, August 21st, 1906, with symptoms pointing to enteric fever. The diagnosis was subsequently confirmed by Widal's test. He had a very severe attack followed by a relapse in November, from which he had more or less recovered by the end of the month, and he continued to do well until December 27th, his temperature having been normal for nearly a month. That day his morning temperature was 99° F., and his evening temperature 100·2° F. Pulse full and strong. He was constipated, so he was given a simple enema, as a result of which he passed a large motion.

Next morning, December 28th, his temperature was normal, and he felt much better. On that evening, at 7 p.m., he complained of acute pain all over the abdomen. Tongue slightly coated; knees drawn up; temperature 101·4° F.; pulse 104, regular and strong. On examining the abdomen it was found to be tense and tender, the tenderness being more marked about the right iliac fossa. Fomentations were applied to the abdomen. No morphia was given. At 11.30 p.m. the orderly officer, Lieutenant C. J. Wyatt, R.A.M.C., came over to the mess and told us that Private D. was suffering from signs of general peritonitis, and that

the condition was one of urgency. We accordingly went to the hospital. His condition was as follows: He had very acute pain all over the abdomen, especially in the right iliac fossa. He could not bear any pressure over his abdomen, which, however, was not distended. Face anxious; temperature 100.4° F.; pulse 120, with intervals of rapidity and comparative slowness. About 12.45 he commenced to vomit. He was rapidly getting worse; pulse 140, much weaker and very irregular; temperature 103.2° F. It was evident that in operation lay his only chance of life.

Accordingly, having been given a nutrient enema, at about 1.30 a.m., under ether anæsthesia, an incision, commencing first to the right of the umbilicus, was carried downwards for about 4 inches. On opening the peritoneal cavity a large amount of turbid fluid escaped. White flakes of lymph were found adherent to the intestines. The coils of small intestine which presented were collapsed, dull and intensely congested. They were, with as little handling as possible, traced down to the cæcum, but no perforation was detected. The pelvis was filled with hot saline solution poured in gently out of a jug, a very large drainage tube was inserted down to the bottom of the pelvis, and the abdominal wall closed. The operation lasted thirty-five minutes. After the effects of the anæsthetic had worn off he was propped up in an inclined position in bed.

On December 29th, 1906, the notes say that he had a fairly quiet day, vomited twice, evening temperature 96.6° F., pulse 144, and much pain all over abdomen, coming on in paroxysms. Wound dressed; a little purulent discharge.

The following report was made on bacteriological examination of the discharge: Bacilli in large numbers, also cocci and diplococci. Staphylococcus was isolated, also a coli-looking organism forming gas with gelatine.

On December 30th, 1906, he vomited frequently small quantities of clear, watery fluid.

On December 31st, 1906, vomiting continued, but he was much better. Temperature 99.8° F.; pulse 124, but stronger.

January 1st, 1907, a smaller sized tube inserted. Improving daily.

January 7th, 1907, food given by the mouth. Progressing well.

January 21st, 1907, drainage tube removed. From this date progress has been uninterrupted, and now, February 17th, he is convalescent.

Remarks on the Case.—The following points are of interest:

(1) The time after the onset, the one hundred and twenty-ninth day after admission, and the long time of convalescence (nearly a month) before signs of perforation occurred. Moynihan, in his book on "Abdominal Operations," quoting Dr. W. D. Haggard, states that 3.31 per cent. occur in the first week, 20.19 per cent. in the second week, 38.94 per cent. in the third week, 14.90 per cent. in the fourth week, 9.13 per cent. in the fifth week, 5.75 per cent. in the sixth week, 7.21 per cent.

from the seventh week to eleventh week, and has been observed as late as the one hundredth day (Curschmann). Holmes operated on one case after four months.

(2) The fact that no perforation was found. It is practically certain that a perforation had occurred, otherwise there would be nothing to account for the acute peritonitis which was present. It seems probable that there was a small perforation, and that this was sealed by a flake of lymph. The search was, however, extremely limited on account of the condition of the patient.

The success of the operation was probably due to : (a) The promptitude with which it was performed, to which the credit must be ascribed to Lieutenant C. J. Wyatt for calling attention to the urgency of the symptoms ; (b) to the fact that no attempt was made to hunt for the perforation in a patient *in extremis* (much handling of the gut would probably have caused his death from shock) ; (c) to the free dilution of the toxins by saline solution ; (d) the free pelvic drainage ; (e) the post-operative position of the patient with the back well raised ; this enabled the wound to drain well, and prevented the infection of the upper area of the abdomen.

THE ADMINISTRATION OF QUININE IN MALIGNANT AGUE.

By CAPTAIN W. D. C. KELLY.

Royal Army Medical Corps.

QUININE no doubt has a specific action in malaria ; whether it acts on the parasite when free in the plasma or in its intracellular existence is disputed. It does not cut short a cycle once begun, because the toxins are already liberated, but inhibits the formation of a new cycle.

In malignant malaria, at all events, there is no doubt that the intramuscular method of giving quinine is far and away the best. The method adopted is to give three injections of 8 grains each into the buttock on three successive days. This is enough to cut short the fever in the vast majority of cases ; a fourth may be necessary. No more injections are given until the periodic rise is expected. From the observation of a number of charts this rise takes place about the tenth day after the last day of fever, and therefore I give an injection about the eighth and ninth day. What it comes to is that you anticipate your attack and cut it short. When one comes to consider the action of quinine and the condition of a malarial cachectic, it is nothing short of criminal to indiscriminately administer quinine in large doses ; in fact, it only aggravates the condition.

How does quinine act ? It is taken up by the blood as the hydrochloride, and excreted by the kidneys alone as the amorphous alkaloid (Mitchell Bruce). One of its main actions in the blood is to inhibit

Acting on these lines I give three injections of quinine at the height of the fever, followed by an injection once a week for six weeks. It is not claimed that this treatment is a specific for malignant malaria, it does not in all cases completely control the temperature, but each attack is less and less severe, until finally the period is only indicated by a slight elevation of temperature, say to 100° F. for the evening.

Malarial Cachexia.—The disease is primarily an anæmia—a secondary anæmia due to the destruction of red blood corpuscles and consequently hæmoglobin. In a mild case you have all the phenomena of anæmia one sees so frequently at home in girls. In the more advanced cases scorbutic symptoms develop, with ulceration of mouth, spongy gums, hæmorrhages, &c. Although in the acute stage there has been an acute splenitis in many cases, one rarely sees a large spleen in the malarial cachectic of this locality (Rawal Pindi).

[illegible]

Besides this drug treatment of cachectics a liberal diet is given with plenty of fresh vegetables and fruits, and the risks of over fatigue and exposure to cold are guarded against.

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is a low coagulative power of the blood. I am unable to verify this by laboratory experiments, but, clinically, there would appear to be no doubt as to its value.

CASE OF HYDATID DISEASE OF THE FEMUR.

BY CAPTAIN S. L. CUMMINS.

Royal Army Medical Corps.

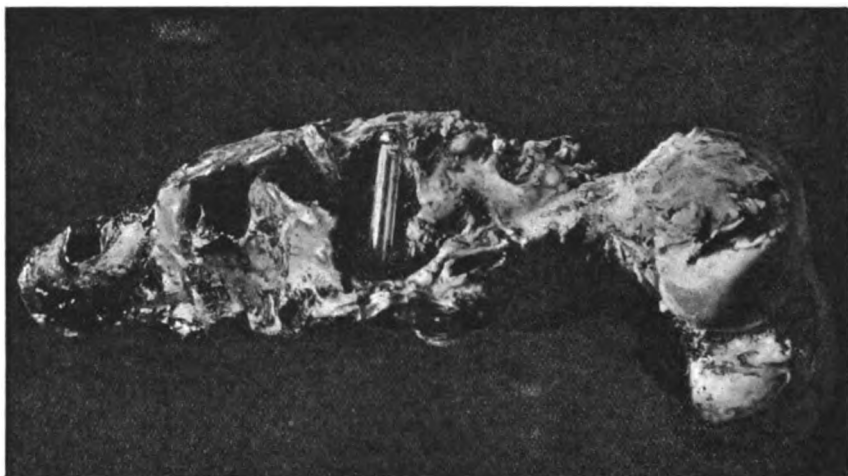
No. 2253, Nafer Sayed Sulieman, 9th Sudanese Battalion, was invalided from the Bahr-el-Ghazal and admitted to Khartoum Hospital early in October, 1905. On admission he was found to be suffering from an ununited fracture of the lower third of the right thigh. The bone of the lower fragment to as far as just above the condyles of the femur was felt to be thickened, which was attributed to callus.

His history was as follows: Three months before, while working at a "shadoof" (an apparatus for raising water for irrigation of land), he had fallen through its aperture for a distance of about twelve feet, sustaining a fracture of the right thigh, which he himself attributed to a mass of clay falling upon him. The fracture was set but did not unite, and, as I have since learnt, Major Bray, R.A.M.C., who saw the case while in the Bahr-el-Ghazal, discovered a thickening of the lower fragment which, he considered, might possibly be due to a malignant new growth, to which he also was inclined to attribute the non-union of the fracture.

On arrival at Khartoum his condition was as follows: A considerable thickening around the fracture. No fluctuation. No general wasting. Marked crepitus on manipulation. About one inch of shortening. No rise in temperature. It was decided to refresh the ends of the bone by rubbing them together under an anæsthetic, and to put the limb in plaster of Paris. This was done, but the fracture remained ununited at the end of six weeks. An operation for wiring was suggested to the patient, but refused, so a fresh effort was made to obtain union, the fracture being put up on a Liston's splint, with extension by weights. This proving futile, an operation was again suggested and accepted.

On January 13th, 1906, assisted by Captain Thomson, R.A.M.C., I cut down upon the bone with a view to wiring the fragments together, and found the following condition: A fracture existed half a hand's breadth above the knee-joint. What appeared to be a second and partial fracture was found about $1\frac{1}{2}$ inches higher up, being a breach of continuity in the antero-external surface of the bone, about $\frac{1}{4}$ inch in extent. On attempting to bore through the bone for the passing of the wires it was found to be brittle, and the medullary cavity was found to contain enormous numbers of cysts, varying from the size of a pea to that of a sparrow's egg, and being obviously hydatidiform in nature. These

were found to fill the cavity, which extended a $\frac{1}{4}$ inch above, and appeared to have caused the previously-mentioned loss of continuity on the surface of the bone, and which reached as far as the condyles below. The cavity was cleared out and the wound sewed up, a drainage tube being introduced. Dr. Andrew Balfour, of the Gordon College, kindly examined the cysts and pronounced them to be echinococcus, finding hooklets and numerous scolices in their interior. In view of the high mortality which attends such cases, and the egg-shell condition of the bone, which made union highly improbable, it was decided to remove the limb.



On January 14th I amputated, cutting through the bone $\frac{1}{4}$ inch above the cavity. The patient made a good recovery, the wound healing by first intention, and he was subsequently discharged from the Service with a good stump.

There seems little doubt that the fracture was subsequent to thinning of the bone by the hydatid growth. The case is remarkable as being the only instance of echinococcus which I have yet met with in the Sudan, and I can find no record of any previous case having occurred among Sudanese troops. The man, however, had been serving in the Niam Niam country for about a year previous to his accident, and as the Sandeh people own a large number of dogs it is possible that echinococcus may be more common amongst them than in the parts of the Sudan which we have hitherto occupied. As far as I can learn, about seventy cases of hydatid of the femur have hitherto been recorded.

The above is a photograph of the amputated lower end of the femur,

which clearly shows the extent of the cavity, and the great thinning of the bone as a result of the growth.

My thanks are due to Dr. Balfour for his courtesy in examining the specimens, and to Mr. Beam, of the Gordon College, to whom I am indebted for the photograph.

Travel.

BATHS AND BATHING IN JAPAN.

By MAJOR K. BRUCE BARNETT.

Royal Army Medical Corps.

ONE of the things which impresses the visitor to Japan most, is the fact that delicious hot baths can be obtained everywhere—in the great hotels in Tōkyō, or in the most remote mountain hamlet. The Japanese, in their persons and houses, are the cleanest people in the world—as the Chinese are the dirtiest—and every man, woman and child of high or low degree has a daily hot bath. Though most of the items of Japanese civilisation have been, at some time or other, borrowed from China, this does not apply to the universal habit of bathing, which is recorded in the most ancient Japanese literature, and dates back to the days of mythology. The bath is taken at a temperature which is perfectly astonishing to anyone who is only accustomed to what is called a “hot bath” in Europe or America.

Purification of the body is at present associated with the Shintō ritual, the popular form of religion; but bathing, as practised in Japan, has nothing to do with religion, and is indulged in for its own sake and the satisfaction of being clean. Dr. Seaman, in his interesting book, “The Real Triumph of Japan,” writes: “Every man bathed before going into action, and made himself as near surgically clean as possible. While in barracks in Japan, he bathes every night; in transports *en route* to Manchuria he had at least two baths. At the front he bathed at every possible opportunity.” The baths here referred to are hot baths, generally taken at temperatures ranging from 110° F. to 120° F., though at some places this is exceeded. Baths are either public or private, and almost all houses are provided with one, either in or near the house. The

common bath is a large wooden tub, oval in shape, usually with a wooden cover. A copper tube passes through it at one end. The bath is cleaned out and filled with cold water every morning, charcoal is burned in the tube, and the water is thus heated and ready by the evening, or a cauldron and small furnace near the house provide the hot water.

In the towns the baths are in the houses, but in the country they are often several yards away, and the various members of a peasant's family may sometimes be seen in the summer-time trooping out in a state of Nature to take their turns at the evening bath. The public baths are of the same kind as the private, but are generally rectangular in shape and much larger.

It used to be the universal custom in the baths for men and women to bathe together, and the baths were open to the street. At some of the more remote, hot, medicinal springs in the country districts, this arrangement can still be seen. There is no indelicacy connected with this custom, with which the people have been familiar from childhood. It is a matter of course, an ordinary sight, and no one appears to know that he is naked. Cleanliness is more esteemed by the Japanese than our artificial Western prudery. As the Editor of the *Japan Mail* has well said, "the nude is seen in Japan, but is not looked at." Mitford, in his charming book, "Tales of Old Japan," remarks: "Speaking upon the subject once with a Japanese gentleman, I observed that we considered it an act of indecency for men and women to wash together. He shrugged his shoulders as he answered, 'But then Westerns have such prurient minds.'" Of late years, out of deference to this Western prejudice, if we may so call it, "mixed bathing" has been forbidden by the Government, and there is generally a division—though often of the flimsiest nature—between the men's and the women's bath. It is stated to consist sometimes merely of a bamboo laid across the surface of the water. I have myself seen one place where, although there were separate entrances marked for "Men" and "Women," there was only one bath inside.

There are over 1,100 public baths in the city of Tokyo alone, in which it has been calculated that over 400,000 persons bathe daily. The daily tub is taken after the work of the day is over, and the dress is changed at the same time; but in summer, and among persons with leisure, the bath is sometimes taken three or four times a day. It is only those who are so poor that they cannot afford a bath at home who go to the public bath-houses. In a Japanese family or small inn, one bath does for everybody.

The water is seldom changed more than once or twice a day, except where it comes from natural hot springs, when the change is automatic and continuous, so that from a score to a hundred people might bathe in the same limited amount of water which a large bath will contain. The bath is first used by the men—the lords of creation—then by the women and children, and last of all the servants, at a late hour in the evening, assemble to bathe and discuss the events of the day. A European guest at an inn is generally accorded the honour of bathing first, as the Japanese will always do their best to avoid bathing at the same time as a foreigner. The people of the house and the Japanese guests will, as a rule, endeavour to arrange matters, so that when the stranger is in the bathroom he has it to himself; and although in some places it excites considerable local interest, and all available cracks are used for the peep-show, speaking generally, it is not true that the whole population turns out to see the foreigner bathing. At the same time, the European traveller who has temporarily adopted the Japanese style of living, must not be disconcerted if, in visiting hotels away from the ordinary tourist track, when sitting in his bath one or two ladies should come and sit down beside him. He must not appear surprised or shocked, but take everything he sees for granted, as if he were sitting in the reading-room of a European hotel, or the smoking-room of his club. "An eccentric situation, from our point of view, but not an indecent one from theirs" (J. S. Ransome). If they do not know him they will take no notice of him.

"According to the Japanese standard, any exposure of the person that is merely incidental to health, cleanliness, or convenience in doing necessary work, is perfectly modest and allowable; but an exposure, no matter how slight, that is simply for show is in the highest degree indelicate. It is surprising how quickly foreigners usually adopt the naïve Japanese point of view; in a few weeks one looks on nakedness with the same indifference as the natives, except when a beautiful figure arrests the æsthetic attention. Not only are the Japanese, in their indifference to nudity, more sensible and pure-minded than their censors, but, in the matter of bathing and cleanliness, they are, as a nation, infinitely more civilised than Europeans and Americans. That *Japan has no 'Great Unwashed,'* is a statement of such wide bearing that the occidental mind can scarce grasp its significance at first hearing." (Finck's "Lotos-Time in Japan").

Each person, according to Japanese custom, first thoroughly

washes himself, or herself, with soap and hot water—wooden ladles being provided—sitting on the wooden floor of the bathroom, before entering the water. Thus each enters the bath *already clean*, and then sits in the hot water immersed quite up to the neck for two or three minutes, often repeating the process several times, according to inclination and the temperature of the water. On leaving the bath finally the washing process is repeated all over again. This constitutes the chief event of the day in a Japanese household, and one that is not hurried over. Very small towels are used, scarcely bigger than large handkerchiefs, and it is the custom in Japanese hotels to present each guest with one bearing the name of the house, on payment of his bills before leaving.

Besides the private and public baths there are what may be termed the semi-public baths at all hotels and tea-houses. The first thing one usually does on arrival at a Japanese hotel is to take off one's clothes and have a bath. At such hotels as are frequently visited by foreigners, there is usually bath accommodation of a sort, where the European can disport himself in privacy. It is not necessary for the guest to have a single item of luggage, everything from night-clothes to tooth-brushes being provided by the house. After the bath, he may if he wishes be shampooed by the blind *amma-san*, as massage has for centuries played a great rôle in Japanese medicine.

There has been much exaggeration about the temperature at which the baths are used. The ordinary hotel bath, though possibly somewhat warmer than our baths, is seldom too hot for a foreigner to use without serious discomfort. A hot bath at home indicates one at a temperature of 100° to 106° F. In Japan everything below 110° F. is thought too cold, and anything above 120° F. unpleasantly hot, as a rule. Temperatures between these two limits are considered agreeable. Personally, I found 114° F. quite hot enough. Women and children generally use the water at a somewhat lower temperature than the men.

As to the effect on the health of the people by the custom of always bathing in very hot water, or, "boiling" themselves, as it is often described, a few remarks are necessary. When first Japan became open to the trade of the world, and the Japanese began to take the advice and study the methods of the Western nations (after 1868), the question of hot baths was not omitted. Western physicians strongly condemned the practice, apparently for no better reason than that it was foreign to European ideas and custom, and therefore must be bad. A regulation was issued

ordering that the water in all public baths was to be only moderately heated. This caused great discontent. Afterwards the subject was investigated by a committee of European and Japanese doctors, with the result that, except in the case of people suffering from cardiac weakness, the national custom was pronounced not only harmless, but beneficial. The high temperature of the water thoroughly opens the pores of the skin, even without the use of soap, and a healthy skin action and cleanliness are secured which it is impossible to get with any amount of washing in cold or so-called "hot baths." The hotter the water the less chance there is of catching cold, while a very hot bath taken just as it is felt that a cold is coming on, is the very best method of aborting it. The invigorating effect of a very hot bath after a tedious day's journey in hot or cold weather is wonderful, and very different from the relaxing effect of a tepid bath: it soothes the nerves, eases the tired muscles, promotes appetite and gives sound sleep. In very cold weather it has the effect of preventing the cold being felt for several hours afterwards, while in hot weather it has a distinctly cooling effect. People who have lived much in the East are in the habit of taking a hot bath in the evening before dinner. It is very refreshing, and free from the danger attending a cold bath, of causing congestion of the abdominal organs, especially the liver. Almost all foreigners resident in Japan adopt hot water bathing, which seems to suit the climate better than cold water, which is apt to cause rheumatism, fever, and a continuance of coughs and colds.

Sea bathing has also in recent years become very fashionable among the Japanese upper classes, following Western habits, and such places as Ōiso and Ushibuse, charmingly situated on the Bay of Suruga, are studded with villas and hotels, much frequented in the summer months by the people of Tōkyō.

The following records of temperature, which I have confirmed, were taken at Kusatsu by Professor W. K. Burton, of the Imperial University of Tōkyō, to whose writings, and also to those of Professor B. H. Chamberlain, of Tōkyō, I am indebted for many of the statements made in this paper.

Temperature of the air, 75°. Temperature of bath 116°.

Temperature of body before bathing, 98·4°. Time in the bath five minutes.

Temperature of body at the end of five minutes in bath 101·5°.

" " " one minute after leaving bath 102·4°.

" " " two minutes after leaving bath 102·4°.

Temperature of body three minutes after leaving bath 101·5°.

„ „ „ ten minutes after leaving bath 98·6°.

The temperature was taken by a clinical thermometer in the mouth, and the degrees are Fahrenheit.

It has been thought that the habit of public bathing, especially as in many places the water is not very frequently changed, might lead to the communication of infectious diseases. This does not appear to be so, except in an isolated case or two, and the risk is more than compensated for by the general improvement in health which is the result of cleanliness.

As Professor Chamberlain has well said, “a Japanese crowd is the sweetest in the world.” Both Sir Edwin Arnold and Lafcadio Hearn have endorsed this statement, the former, with poetic license, comparing the smell of a Japanese crowd to the scent of the geranium flower! Hearn states: “Your Japanese tramp takes his hot bath daily, if he has a fraction of a cent to pay for it, or his cold bath if he has not. In his little bundle there are combs, tooth-picks, razors and toothbrushes. He never allows himself to become unpleasant. Reaching his destination he can transform himself into a visitor of very nice manners and faultless, though simple, attire.”

An almost national change for the better in diet, clothing, public hygiene and education, has taken place in the last twenty years. The charge for the use of the public baths is so small at present—less than one halfpenny English money—as to place them within the reach of the poorest people, and Japan is a very poor country.

The country is extremely volcanic, and earthquakes are very common, averaging over two a month. At the present time the Japanese count over twenty active and hundreds of dormant volcanoes. It may also be said to be bubbling with hot springs from end to end, some of pure water, many highly impregnated with mineral salts and famous for their geyser-like action. All that are in any way accessible are resorted to by the people for bathing, who have great faith in their medicinal virtues. Sulphur springs may be found in almost every province, and beds of sulphur abound. In Shinano and Echigo the people cook their food by the inflammable gas which issues from the ground and is led through bamboo tubes (W. E. Griffis).

The most noted spas are Kusatsu, Ashinoyu, Yumoto near Nikko, Yumoto near Hakone, Nasu, Shiobara and Unzen (sulphur); Ikao, Arima and Beppo (iron and soda); and Atami and Isobe

(salt). The chief mineral constituents of these springs are sulphur, sulphate of iron, and chloride of sodium. The crater of Shirane-San has a pool which is stated by Dr. Divers, F.R.S., to contain $2\frac{1}{2}$ per cent. of hydrochloric acid. The waters at Miyanoshita, the best known to foreigners, only contain traces of salt and soda; but the hotel is one of the best in Japan and the neighbourhood delightful in fine weather. The majority of these springs are situated in the mountainous districts, which are also the most interesting to the traveller who wishes to see something of the country and the people away from the treaty ports, and who is prepared to "rough it." The mineral springs of Japan are generally used at high temperatures; few are cold, or contain carbonic acid gas. Although the Japanese are said to suffer much from dyspepsia, the springs are seldom used in the treatment of diseases of the stomach, liver, dysentery, &c., as at Vichy, Carlsbad, and other places in Europe.

During the spring of 1906 I paid a visit of several days to Kusatsu, in the province of Kotsuke, the most celebrated of all these spas, a short description of which I think may be interesting. It is situated on a plateau, surrounded by lofty mountains, in North Central Japan, at an elevation of 3,800 feet above the sea, and amidst scenery which recalls parts of Switzerland. The springs, which have had a reputation since the latter part of the seventeenth century, probably stand alone in the world on account of their double character, consisting as they do of cold corrosively acid water, and nearly boiling sulphur water. The cures which are reported to be produced yearly by the combined effects of temperature, mineral acids, sulphur, arsenic, iron and alum, assisted, no doubt, by the pure, bracing mountain air, in cases of leprosy, syphilis, rheumatism, gout and chronic skin affections, are little short of miraculous. The repute in which the waters are held is indicated by the old Japanese proverb, which states that "love is the only grave distemper against which Kusatsu can effect nothing." One educated European, the manager of an hotel in Yokohama, who had undergone the cure, suffering with renal symptoms, told me that it made him feel at least ten years younger.

Kusatsu may be comfortably reached by walking in two days from Ikao, in the province of Joshu, which is close to the railway from Tokyo, taking the road by Lake Haruna, and along the valley of the Agatsuma river, and breaking the journey at the hot springs of Kawara-yu, or from Karuizawa, also on the railway, the distance in both cases being about 30 miles. Given fine weather, the

march is delightful, across moors and through park-like scenery. By the latter route the road passes close to Asama-yama (8,130 feet), the largest active volcano in Japan, which well repays the tedious climb to the top to view the crater. Kusatsu is the coolest of Japan's summer resorts, the average shade temperature being below 80° F. The village consists of a large square, the centre being occupied with hot sulphur springs at a temperature of 160° F., the water being first led into wooden troughs to collect the sulphur. Clouds of sulphurous vapour are continually rising, the smell of which pervades the whole atmosphere of the place. This is more marked in damp and cold weather, during which our visit was made.

The springs are of various temperatures and are powerfully medicinal, although the chemical constituents are not the same in all. There are numerous public and private bath-houses, and a new hotel, with accommodation and food for foreigners, was being built. In winter the place is almost deserted, and covered in snow; but in the summer season the tea-houses and hotels are full of visitors, who come from all parts of Japan to take the cure, which lasts about six weeks, and consists in 120 baths. The baths are the property of the town, and are not under any regular medical supervision, although two Japanese doctors of the old school were resident in the town.

TEMPERATURE AND CHEMICAL ANALYSIS (GRAMS PER LITRE) OF FIVE OF
THE CHIEF SPRINGS AT KUSATU,

*Kindly obtained for me from the Central Sanitary Bureau, Home Department, Tōkyō,
by Dr. F. Rutherford Harris, and translated by Dr. Ajioka, of the Japanese
Legation Guard, Peking.*

	Taki- no-moto-yu	Netsu-no-yu	Washi-no-yu	Dizō-no-yu	Goza-no-yu
Temperature	148° F.	144° F.	140° F.	141° F.	147° F.
	Gram.	Gram.	Gram.	Gram.	Gram.
Sulphuric acid	1·7201	1·3392	1·8674	1·7578	2·1384
Hydrochloric acid	0·8742	0·8532	0·7461	0·8875	0·8485
Silicic acid	1·1988	0·2550	0·6389	0·6149	0·7383
Calcium sulphate	0·3564				
Sodium sulphate	0·1458	0·4200	0·2400	0·2050	0·4860
Potassium sulphate	0·0551				
Magnesium sulphate	0·1800	0·2990	0·2331	0·2187	0·0150
Aluminium sulphate	1·6270	1·1800	0·0215	0·7199	0·3051
Ferric sulphate	0·3946	—	—	—	—
Sulphuretted hydrogen (H ₂ S)	0·0041	—	—	—	—
Phosphoric acid	A trace	—	0·0728	0·0450	0·0132
Ferrous sulphate	—	0·2280	0·2688	0·2689	0·1663
Monocalcium phosphate	—	Undecided	Undecided	—	—
Organic substances	Trace	Trace	Trace	Trace	Trace
Total solids	5·5561	4·5744	4·0886	4·7176	4·7108

We were taken round by a Japanese gentleman who had been many years in America, and was himself undergoing the treatment, and were initiated into the mysteries of the place. A small charge is levied on all visitors using the baths, whether public or private, which assists in keeping them in repair. No special diet is laid down. Japanese food being sufficiently unstimulating, no other medicinal treatment is prescribed, and exercise, as will be explained, is usually out of the question. The whole brunt of the cure depends on the waters, none of which are taken internally.

The most famous bath is the Netsu-no-yu, or "fever-bath," measuring 45 by 35 feet, and accommodated in a wooden building. The water is brought from the main spring in wooden pipes, and gets considerably cooled in transit. This bath is divided into three compartments, with varying temperatures, the coolest being about 114°, and the hottest about 125° F. The chief active substances are free H_2SO_4 and HCl to the extent of about $\frac{1}{4}$ per cent. of the whole volume. The water, of which I was unable to obtain an analysis, as it issues from the ground, is said by Dr. Divers to contain about three volumes of H_2S per 1,000, and one part of arsenic sulphide in 1,000,000 parts. Professor E. Baelz, M.D., late of the Imperial University of Tokyo, attributes the curative action of the waters to the acids, the effect being analogous to blistering on a large scale. The beneficial result in skin diseases is, no doubt, principally due to the sulphur and arsenic. After about ten days of the treatment, which is commenced in the cooler divisions, blisters are produced about the scrotum, in the axillæ, &c., which result in the characteristic "Kusatsu walk," the patient moving slowly along with the legs wide apart, and the arms raised from the side, often using sticks. The pain of bathing when the body has got into this condition is considerable, and the itching produced after leaving the water is even worse. No ointments or other oily dressings are used to allay this, but the sore parts are swathed in cotton wool, which is provided, before entering the water.

From fifty to a hundred persons bathe at a time, or as many as the bath will accommodate. This system is known as the Jikan-yu or "time bath," because the hours and the duration are fixed. Five baths are taken daily, three in the morning and two in the afternoon, and the same routine is followed each time. In order, it is stated, to keep up their courage, the bathers in the two hottest baths submit to a semi-military discipline, and all enter and leave the water together at the word of command of the bath-master, who works by a clock which is hung up in a conspicuous

position in all the bath-houses. The patients are summoned to the baths from their adjacent inns by the blast of a trumpet, or the sound of a drum, about half an hour before bathing time, and come hobbling across the square in white cotton jackets and drawers covered by a kimono. The first exercise, which lasts about fifteen or twenty minutes, is performed by the bathers taking their places round the bath and churning up the water with broad boards about 5 feet long, singing in chorus (fig. 1). This mixes and cools the water.

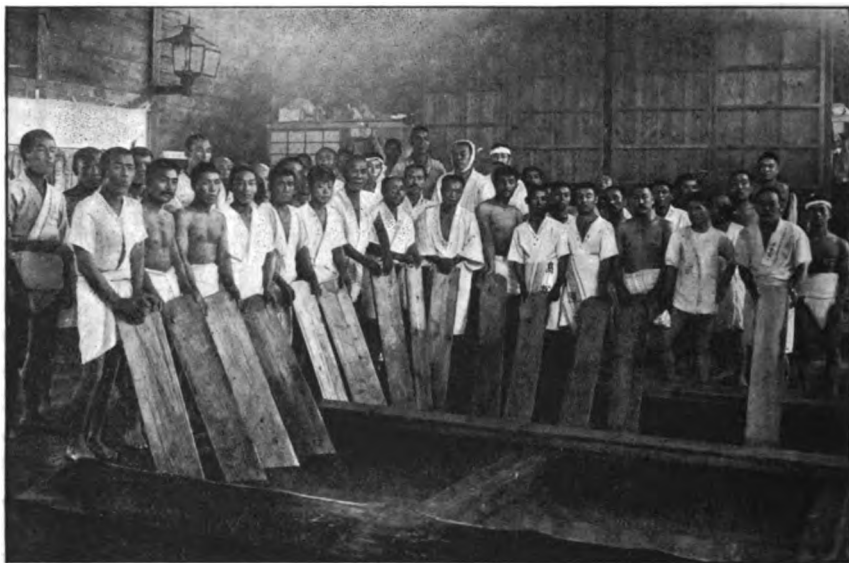


FIG. 1.—Bathers prepared to churn up the water with wooden boards.

The next stage is for all the bathers, on a given signal, to provide themselves with wooden ladles, to bend down and pour 250 dippers over the back of the head and neck, taking care not to let the water enter the eyes, where it causes severe smarting. This is done to prevent syncope occurring on entering the water, a not uncommon thing, as the head is not subsequently wet. This stage occupies about ten minutes, after which there is a short rest, during which the blistered parts of the body are protected by cotton wool and bandages. At the end of this interval the signal is given by the bath-master to enter the water, and very slowly the bathers lower themselves, taking about thirty seconds before they are completely immersed up to the neck, as shown in fig. 2. Then begins the most curious proceeding in the whole ceremony. It is a sort of chant by the bath-master, answered by all the bathers in chorus, on getting into

and while in the water. This is intended to help them to bear the pain of the three minutes' immersion in the water. The following is a very free translation into English, which I borrow from an article by Professor W. K. Burton, published in America in 1892 :—

“If you are all ready enter the water,
There are three minutes.
There are only two minutes more.
Persevere a little longer.
There is only one minute more.
Persevere only a little while longer.
Get out of the water *slowly*.”

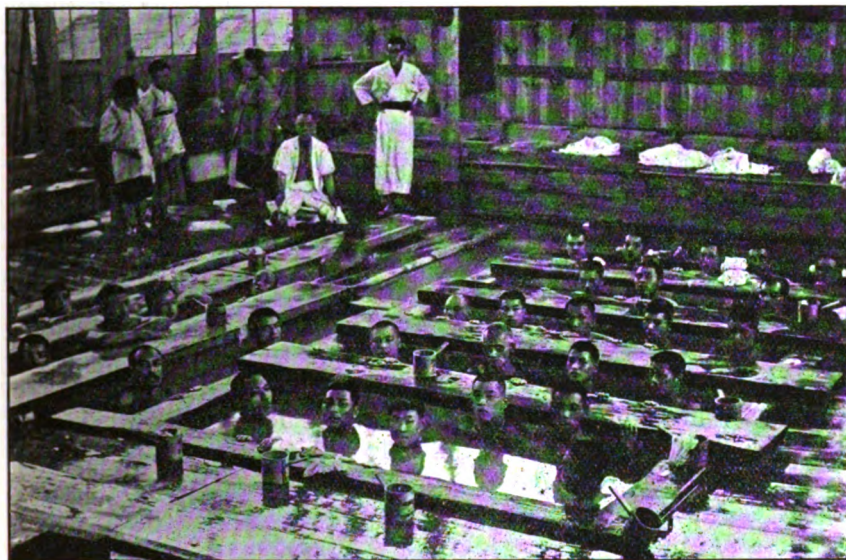


FIG. 2.—Men bathing for three minutes in the Netsu-no-yu Bath, at Kusatsu, in Japan. Bath-master in white. Wooden partitions placed across bath to separate the bathers. Wooden dippers shown.

The hoarse shout, or wail, of the bathers can be heard all over the town and produces a most uncanny impression on the recently-arrived visitor, who might easily imagine that each bath-house was a torture chamber. Still, from my own observation, and, as will be seen in fig. 2, the faces of the bathers, as a rule, do not show that they are suffering pain, and they converse all the time. The order to get out of the water is obeyed with great alacrity. They rise as one man, which compares strangely with their slow and gradual entry. Towels are supplied by the attendants—generally women—and the bathers enter the dressing-room to cool down

before returning to their houses. The bath-house is thoroughly washed out before the next batch of bathers enters.

After completing the course at Kusatsu many of the invalids go to the baths of Sawakari and Shibu, about 10 miles distant, where they undergo the "after-cure." The waters of these springs are much milder, and the sores produced at Kusatsu quickly heal and all irritation disappears.

In the lower part of the town is situated the lepers' quarters. There are many lepers in Japan, but these unfortunates are not treated as outcasts and made to crowd together in settlements. For many years they have voluntarily congregated at certain places where the treatment is supposed to cure or alleviate their sufferings. Kusatsu is one of the chief of these places, and the lepers have a bath of their own (Goza-no-yu). Dr. E. Baelz, a resident for many years in Japan, and a well-known authority, has stated that the Kusatsu treatment of leprosy actually results in the cure of some cases, if taken at an early stage. This treatment consists of bathing, as already described, combined with the very free use of the "Moxa." Moxa is one of the few Japanese words which have found their way into the English language (Chamberlain). It is properly *Mogusa*, that is, "burning herb." A small cone is made of the cottony fibres of the *Artemisia chinensis* (Mugwort), which is applied to the part affected and lighted. In the old Chinese and Japanese system of medicine, burning with the Moxa was considered a panacea for almost every human ill, and, together with acupuncture and scarification, is the only surgical treatment used by the Chinese doctors to-day.

In conclusion, to quote again from Professor Chamberlain's "Things Japanese," "the whole life at Kusatsu is so strange that he whose stomach is not easily upset by nasty sights, would do well to go and inspect it. To squeamish persons we say most emphatically, stay away!"

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Reprint.

UNDULANT FEVER IN SOUTH AFRICA.¹

By P. D. STRACHAN, M.A., M.B., CH.B.

IN the title of this paper the least fashionable designation of the disease, which is commonly called Malta or Mediterranean fever, is used because it has no local significance. Undulant fever is now believed to be endemic, not only in numerous localities surrounding the Mediterranean, but also in India, China, North America, South America, the West Indies, and South Africa.² The local significance of the terms Malta fever and Mediterranean fever may be responsible for the fact that the disease has remained generally unrecognised for many years in South Africa, going under other names, and probably complicating the elucidation of anomalous diseases. It is true that a few medical men in the past, as I shall show further on, have raised their voices in favour of the view that undulant fever is endemic in South Africa; but their efforts have not secured the general recognition of the fact. Even at the coast, where the fever is probably not endemic, cases invalidated from the high veld may sometimes be met with. If such cases are not always correctly diagnosed at the coast, the mistake is neither surprising nor inexcusable. In very chronic cases the physical appearance and the character of the pyrexia are strongly suggestive of tuberculosis. If a diagnosis of tuberculosis be made, the advice which would be given at the coast is obvious. One of my patients was advised to return to the high veld immediately, after he had been only a few days at the coast. To obviate such mistakes in the future, it is advisable that patients suffering from undulant fever should not be sent away without an open note on the diagnosis, whether the names of their next medical attendants are known or not.

My experience of South African fevers began in the Concentration Camp, Springfontein, August 1st, 1901. There I acted for thirteen months. During the summer months there was a sharp epidemic of true typhoid fever in the camp. Among the cases of typhoid fever there were many in which the fever was prolonged and irregular, and these were seldom fatal. Nevertheless, among these the characteristic complications and sequelæ of undulant fever were so rare that one would not be justified in placing them as a whole in the latter category.

¹ Reprinted from *The South African Medical Record*, December 10th, 1906.

² Colonel Bruce, *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, vol. ii., No. 4, April, 1904, p. 486, and March, 1906.

Undulant fever was not thought of at the time, but I feel justified in retrospectively diagnosing six cases as undulant fever. Five were in one family. These were returned again and again to the hospital for many months suffering from what appeared to be a relapsing fever with neuritis. The remaining case was that of a middle-aged man, who was laid up in his tent for several months with lumbago and sciatica and an irregular low fever. I have recently tested three sera from cases of prolonged irregular fever in three separate districts of Cape Colony. These gave marked positive reactions with the *Bacillus typhosus*, negative with the *Micrococcus melitensis*. It seems therefore probable that most of the cases of this type which occurred, at least in my practice, during the war, were cases of typhoid or para-typhoid infection. On the other hand, it must be noted that many cases of undulant fever are symptomless (with the exception of the pyrexia) throughout. It would therefore seem to be almost impossible to diagnose such cases with certainty without the agglutination test, where typhoid and undulant fever are endemic together.

In the end of August, 1902, I began to practise in the town and district of Philippolis. In October, 1902, I came across the first case of undulant fever, and diagnosed it "typhoid." This case was the most prolonged in my experience, the pyrexia lasting with intermissions for two years.¹ None of the more characteristic complications and sequelæ of undulant fever occurred in this case. A daughter of this patient suffered from a continued fever in January and February of 1904.² In her case there was effusion into one ankle joint towards the end of the illness. Towards the end of 1903 it was noted that a considerable proportion of the cases presented the characteristics of undulant fever, and in the beginning of 1904 a paper was read before the Orange River Colony Medical Society, recording seventy-two cases which I believed to be cases of undulant fever. In March, 1904, blood samples from six typical cases were tested for typhoid fever by Dr. Edington at Grahamstown; reaction negative. Since that date the sera of nearly all fresh cases of undulant and typhoid fever, as well as sera from many cases that had recovered, have been tested by Dr. Edington, Dr. G. W. Robertson, Lieutenant-Colonel C. Birt, R.A.M.C., Major Buist, R.A.M.C., and myself. Most of the results thus obtained have already been published by Lieutenant-Colonel Birt³ and myself. They will be summarised in another portion of this paper.

During the past four years 138 cases of undulant fever and 30 cases of typhoid have occurred in my practice. The disparity between the

¹ Lieutenant-Colonel C. Birt, R.A.M.C., JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, January, 1906

² *Ibid.*

³ *Ibid.*

numbers is striking because its sign is the reverse of what might have been expected in South Africa, where the endemicity of typhoid is regarded as a serious problem, while the presence of undulant fever has received little attention until recently.

The following is a statement of the number of the cases of undulant and typhoid fever which were observed in the district of Philippolis during each of the past four years:—

				Undulant fever		Typhoid fever
September, 1902-3	..	..	..	17	..	13
„ 1903-4	..	..	..	75	..	10
„ 1904-5	..	..	..	21	..	4
„ 1905-6	..	..	..	25	..	3
Total				138	..	30

The seasonal distribution of the two fevers has been as described in a former paper,¹ viz.—Fresh cases of undulant fever are generally met with during the spring and early summer months, *i.e.*, September to January. Cases of typhoid fever have generally occurred in the late summer and autumn months, *i.e.*, January to April.

To my former statements² regarding the age and sex incidence, nothing need be added except that undulant fever appears to occur not infrequently in the very young. Two patients at 3, and one at 2½, were among the number of the sufferers. The serum of the last gave a positive reaction in my hands, and the reaction was confirmed by Lieutenant-Colonel Birt.

Before the writing of this paper was undertaken, it was hoped that a clinical comparison between undulant fever in South Africa and in the Mediterranean might be made. I regret to say that I have been unable to lay hands upon the classical work of Hughes, which is out of print. Lieutenant-Colonel Birt, however, has kindly supplied me with some notes from Hughes. The actual and percentage numbers of what appeared to be leading symptoms, complications and sequelæ have been worked out in the above 138 cases. Doubtless the value of such statistics is considerably impaired by the smallness of the number of cases.

Number of cases = 138.
(Continued fever in every case.)

Lumbago ..	..	..	..	..	..	87	=	63	per cent.
Other neuralgic ..	..	..	..	..	..	6		4·3	„
Paraplegia ..	..	..	..	..	..	4		2·9	„
Joint effusions ..	..	..	..	..	..	27		19·5	„
Pulmonary complications ..	..	..	..	..	..	26		19	„
Orchitis ..	..	..	..	..	..	8		5·8	„
If females are not counted						..		9·4	

¹ P. D. Strachan, *South African Medical Record*, August 15th, 1904, p. 141.

² *Ibid.*

Severe typhoid state	..	..	..	..	..	12	=	8.7	per cent.
Symptomless	..	..	..	..	..	30		21.7	„
Gastro-intestinal disturbance	..	..	..	..	..	6		4.3	„
Deafness	..	..	..	..	..	3		2.17	„
Obstinate epistaxis	..	..	..	..	..	1		0.7	„
Endocarditis	..	..	..	..	..	2		1.4	„
Cold lumbar abscess (post-febrile)	..	..	..	..	..	3		2.17	„
Acute nephritis	..	..	..	..	..	1		0.7	„
Intracranial disease	..	..	..	..	..	2		1.4	„
Enlarged liver	..	..	..	..	..	3		3.6	„
Enlarged spleen	..	..	..	..	..	4		2.9	„

A few remarks may now be made upon the above statistics.

The percentage of joint effusions seems lower than one would expect, considering the prominence given to this complication in the usual descriptions of undulant fever. Hughes has put them at some 40 per cent. In only three cases were the joint effusions multiple. The joints affected were, in order of frequency: the knee,¹ ankle,² wrist,³ elbow.⁴ Joint effusions were most common in children and adults.

In the four cases recorded, paraplegia followed very severe neuralgia, and affected the legs below the knee. The extensors of the feet were most severely affected, and were the last set of muscles to recover. The patellar tendon reflexes were for a time abolished. There was no ankle clonus. Pulmonary complications took the forms of bronchitis and atypical pneumonia. The typhoid state was found only in association with severe pulmonary complications. Orchitis occurred only in adults. Hughes has put the percentage incidence of orchitis at 4 or 5, but I am not aware whether females were counted or not. The symptomless cases were for the most part ambulatory. Although constipation was the rule, it did not, when properly dealt with, lead to troublesome gastro-intestinal disturbances. The three cases of deafness were associated with a severe typhoid state. Sweating was a prominent symptom in many of the cases, but in the majority it was not seriously complained of. It may be suggested here that in countries where the atmosphere is exceedingly dry, perspiration tends to become less sensible and at the same time more efficient as a heat regulator. Acute nephritis and endocarditis have been noted among Mediterranean cases. Bassett-Smith⁵ has recently recorded cases of the latter. According to Hughes, renal disease is a serious complication in some prolonged cases. Intracranial disease, in the two cases recorded above, was post-febrile. Such complications

¹ Birt, *British Medical Journal*, August 28th, 1906, p. 976.

² Bassett-Smith, "Reports of Commission on Mediterranean Fever," Part IV., p. 101.

³ Birt, *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, January, 1906.

⁴ Birt, *ibid.*

⁵ Bassett-Smith, *British Medical Journal*, February 10th, 1906, p. 313.

must be regarded as the gravest possible. It seems well to give notes on the two cases:—

CASE I.—A child, aged 9, living at a distance of twenty-seven miles from Philippolis, and convalescent from undulant fever, developed symptoms of meningitis. About ten days after a diagnosis of meningitis had been made, the child was seen again. It was reported by the parents that after a copious discharge of pus from the nose the child began to recover. On this occasion both pupils were dilated, and there was at least object blindness. Objects shown could not be named until they had been handled. There was some mental obtuseness, which made it difficult to ascertain whether there was any kind of visual sense left. The fundus presented a normal appearance in both eyes. Perfect vision was restored in about two months.

CASE II.—A man, aged 38, presented himself on September 22nd, suffering from constant headache and partial paralysis of the left leg. He gave a history pointing to undulant fever in May, 1904. His two brothers with their families, living on the same farm had had the disease some months previously. His serum was tested by Dr. Edington against the *M. melitensis* in a dilution of 1 in 50, and gave a positive reaction. He was seen at his farm on three occasions subsequently by Dr. D. M. Macrae and myself. On the occasion on which I saw him last, there was complete left hemiplegia, and both pupils were dilated. A view of the fundus could not be obtained, because the patient, owing to intense headache, was unable to keep his head still. A diagnosis of intracranial tension from abscess or tumour was made. He died on October 6th. Operation and *post-mortem* examination were refused. Possibly this was a case such as Hughes describes, p. 124, Case 15, of which the following are notes¹:—

“Cerebro-spinal irritation with fatal intracranial pressure, high fever twenty-five days, then delusions for four days, ‘rheumatic’ pains nerves of legs, remittent fever till forty-fifth day, then intermittent. Exacerbation one hundred and second day. Mentally irritable, sleepless, shooting pains in head. One hundred and twelfth day, headache very severe, reflexes exaggerated, hyperæsthesia, rambled in conversation. One hundred and thirteenth day, unconscious for most part. One hundred and fifteenth day, blind left eye, left pupil enlarged, ptosis and divergent strabismus. One hundred and sixteenth day, coma deepened; died; no past syphilis. *Post-mortem*.—Brain much congested, soft and œdematous at base. Excess of cerebro-spinal fluid. Lymph on choroid plexus. *M. melitensis* from brain.”

A third cerebral case very similar to the above has not been inserted in the above statistics, because at the time of framing them I believed

¹ Hughes' "Mediterranean Fever," p. 124.

that the condition was not secondary to undulant fever. Before death this case passed into the hands of a medical practitioner in another part of South Africa, who attributed the fatal issue to arterio-sclerosis, which I had failed to observe. Lieutenant-Colonel Birt, on receiving notes of the case from me, expressed the opinion that death was due to *M. melitensis* meningitis, and furnished me with the above notes from Hughes.

It is a remarkable fact that enlargement of the spleen was detected in only four cases. Perhaps this was due to the incompetency of the diagnostician. Even in typhoid fever, I have in the majority of cases failed to detect enlargement of the spleen. This condition receives so much prominence in classical descriptions of both undulant fever and typhoid fever, that I have grave doubts as to my own ability to exclude enlargement of the spleen. When a positive conclusion has been come to, one is usually on safer ground.

The appearance of the tongue is worthy of remark. During the first few weeks of fever it was generally clean and red at the edges and tip, and elsewhere covered with a light silvery fur. In the worst cases it was thickly coated with white, was large and flabby, showing indentations. In only one case, in which pneumonia was present, was the coating brown. In the vast majority of the cases the tongue was clean and red during the later and greater period of the illness. In a few, although clean and red, it was dry, shining and cracked.

Children seemed to suffer least, notwithstanding that in them the pyrexia was most acute. One girl, aged 10, was seen four times in succession at intervals of a week. On these occasions the temperature ranged between 103° and 105° F. Nevertheless the tongue was clean, red, and moist, the appetite was good, and nothing was complained of except the hardship of being kept in bed. A boy, aged 11, was found going about with an evening temperature of 104° F. In this case there was slight lameness from pain in one hip.

The character of the pyrexia corresponded in all respects to that usually described in the literature of Mediterranean fever. Among the few continuous charts which one was enabled to obtain, some show distinct undulations, others are extremely irregular. The pyrexia varied in duration from a few weeks (in children) to eighteen months or two years (in some adults). In cases lasting under three months it was usually continuous. In those of much longer duration there were intermissions and relapses.

The serum reactions may be briefly summarised as follows: tested by Dr. Edington and Dr. G. W. Robertson:—

34 sera in dilution 1 in 10 to 1 in 50.

25 positive with *M. melitensis*.

3 positive with *B. typhosus*.

5 negative with both.

By Lieutenant-Colonel Birt 54 sera from Philippolis and other dis-

tricts in the Orange River Colony and in Cape Colony have been found to give positive reactions since August, 1905. Of these thirty were from cases that had recovered, and had been well for periods varying from a few months to eighteen months. The average dilution for a complete or almost complete reaction in this series was 1 in 37. The remaining twenty-four sera were taken from cases during the progress of the disease. In this series the average dilution for a reaction complete or almost complete was 1 in 242. If the figures of the agglutination limits are taken, a much higher average is obtained. I was enabled to test all the latter myself through the kindness of Lieutenant-Colonel Birt and Dr. G. Dean, of the Lister Institute, who have kept me supplied with reliable emulsions of *M. melitensis* and *B. typhosus*. During the year, September, 1905, to 1906, only three sera reacted positively with the *B. typhosus* in my practice.

All of the tests recorded above were efficiently controlled, sera from normal individuals and from cases of typhoid fever and rheumatic fever being used on various occasions as controls in dilutions 1 in 10, with uniformly negative results.

The testing of sera to their agglutination limits naturally involves more trouble and a larger expenditure of the emulsion used. For diagnostic purposes it appears to be quite sufficient to test a serum against the *M. melitensis* in dilutions of 10, 30 and 60, provided a reliable emulsion is used. By a reliable emulsion is meant one which is not agglutinated or sedimented in a dilution of 1 in 10 in twenty-four hours by serum from an individual who is not suffering, or has not suffered, from undulant fever, and which is not auto-agglutinable. According to Birt and Lamb,¹ a complete reaction in 1 in 10 is diagnostic of undulant fever past or present. This they proved by finding the result negative in 150 sera taken from as many individuals, forming a group representing fifty cases of normal health and 100 cases of various diseases other than undulant fever. Fleet-Surgeon P. W. Bassett-Smith, R.N.,² more recently, working with a dilution of 1 in 30, found absolutely negative results in 150 cases, representing forty-one different diseases other than undulant fever, with four exceptions, which, on further investigation, were found to prove the rule.

If too high a dilution be used the reaction may be missed altogether, especially in chronic cases, as pointed out recently by Captain Crawford Kennedy, R.A.M.C., and Fleet-Surgeon Bassett-Smith, R.N.³ There seems to be a rooted prejudice against the use of low dilutions, based perhaps upon the findings of some who have worked with unreliable

¹ Birt and Lamb, *Lancet*, September 9th, 1899.

² Bassett-Smith, "Reports of Commission on Mediterranean Fever," Part IV., p. 101.

³ Bassett-Smith, *British Medical Journal*, February 10th, 1906, p. 818.

cultures. I have seen two reports from two separate Government laboratories in South Africa, in which this attitude is shown. The first was on a sample of blood sent by Dr. D. Campbell, at Johannesburg, from a case which had been sent down from Pietersburg (Transvaal) diagnosed malaria. Dr. Campbell requested that the blood should be tested for typhoid and for Malta fever, because there was a history of two months' fever with muscular pains and no rigors.

The following is a copy of the report: "This serum does not give the Widal enteric reaction. *M. melitensis* was agglutinated in a 5 per cent. dilution, but not in a 1 per cent. This is probably not diagnostic."

The last statement can be based only upon a want of confidence in the culture used. There is no mention of controls. Unfortunately the patient passed out of Dr. Campbell's hands into one of the hospitals, and Dr. Campbell, who left South Africa shortly afterwards, was unable to give me the further history of the case.

The other report was on a sample from a very chronic case from Barkly West, Cape Colony. Here 1 in 60 was the lowest dilution used, and the diagnosis was pronounced doubtful, owing to the feebleness of the reaction. Lieutenant-Colonel Birt's report on this patient's serum was as follows:—

To "Native David" *M. melitensis*.

Ten complete, 20 nearly complete, 40 marked, 50 marked, 80 trace, 160 *nil*.

Control. Normal human serum.

To "Native David" <i>M. melitensis</i>	$\left\{ \begin{array}{l} 10 \\ 20 \\ 40 \\ 80 \\ 160 \end{array} \right\}$	<i>Nil</i> .
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"Native David," resident in Philippolis District, was the individual from whose blood the culture used was grown.

The following quotation from Dr. F. M. Sandwith's "Medical Diseases of Egypt," on the value of the Widal reaction in enteric fever, is applicable almost without qualification to the analogous test for undulant fever: "A good clinician will soon learn to believe its positive results without putting too much faith in negative reports."

Birt and Lamb¹ have shown that the information which can be gained by testing a serum periodically to its limits is of great prognostic value. This means of prognosis is probably second only to the ascertaining of the opsonic index, and can be much more easily used by the general practitioner.

Stronger evidence than the results of serum testing can now be brought to the support of my present thesis. In February, 1905, Dr.

¹ Birt and Lamb, *Lancet*, September 9th, 1899.

Targett Adams,¹ of Bloemfontein, reported to me that he had isolated the *M. melitensis* from the blood of one of my patients, and in March, 1906, Lieutenant-Colonel Birt, at London, succeeded in isolating cultures of *M. melitensis* from two blood samples sent from Philippolis; one was taken from a white youth, the other from a native. These cultures were found to be identical with the *M. melitensis* in kind, the only difference being a somewhat higher degree of agglutinability than that exhibited by the Mediterranean strain when tested against serum from South African cases of undulant fever.

MODE OF THE TRANSMISSION OF THE DISEASE.

Although in many instances whole families became infected, the mode of transmission was probably not by direct contagion. There is abundant evidence to show that in undulant fever this mode is a rare one. Owing to the recent discoveries in Malta, one's attention was naturally turned to the goat as a probable factor in the spread of the disease. In the district of Philippolis there is a strip of mountainous country about ten miles wide bordering the Orange River. It was thought that the greater prevalence of undulant fever in this portion of the district might be explained by the fact that here grazing is unsuitable for sheep and the stock consists principally of goats. It was found that the vast majority of those who suffered from the fever had been in the habit of drinking goats' milk in their coffee. The milk was not usually boiled in the coffee, but was added to it unboiled.

In October, 1905, blood samples from fourteen goats were collected at a farm 29 miles north-west of Philippolis, and a few hundred yards from the Orange River, where a whole family had been infected. These were sent to Pretoria to Lieutenant-Colonel Birt, who was on the point of leaving for England. They were tested by him in England, and only one gave a positive reaction, complete in 1 in 20.

In February, 1906, one case of undulant fever was encountered at the farm, Hottentotspoort, about seven miles west of Philippolis. The duration of the illness could not be determined accurately from the history given. It was ascertained that only twenty goats were being milked. A blood sample from each of these was tested in dilution 1 in 20. The serum of only one goat gave a positive reaction. The following day I went to the farm and took two more blood samples and two milk samples from this goat. The milk was collected in the house with somewhat rigid aseptic precautions. Samples of the blood and milk were sent to Lieutenant-Colonel Birt, London, and to Major Buist, Pretoria. Major Buist reported: Serum positive in 1 in 100; milk sterile. Lieutenant-Colonel Birt reported: Serum positive up to 1 in 40; milk sterile.

About three miles west of Hottentotspoort is the farm Kleinpaarden-

¹ Strachan, *Brit. Med. Journ.*, July 15, 1905.

fontein, on which live three families. Between the end of December, 1905, and February, 1906, I came across seven cases of undulant fever on this farm distributed as follows: Family P., five cases. Family B., senior, none. Family B., junior, one case; native servant, one case. All three families had herds of goats numbering several hundred. Family P. was said to be using milk from seventeen goats. Blood samples from all of these were found to give negative reactions in dilution 1 in 20. Now Family B., senior, had hired a portion of the farm from P., in May, 1905. Formerly they had lived at a farm twenty miles north-west of Philippolis, and I found two members of this family suffering from undulant fever in November, 1903. It was therefore decided to examine some of the goats belonging to B., senior. First ten blood samples were tested in dilution 1 in 10. One gave a positive reaction, which on further testing was found to be complete up to 1 in 40. Samples of the blood and milk of this goat were sent to Lieutenant-Colonel Birt and to Major Buist. The milk was thin, serous and very scanty. The blood reaction was confirmed by both officers.

Lieutenant-Colonel Birt tested the milk also against an equal amount of *M. melitensis* emulsion, and found the reaction positive. He failed to get a culture of *M. melitensis* from the milk, the plates becoming overgrown with saprophytes. The capsule containing the milk sent to Pretoria broke in transit.

A few days afterwards it was decided to do the milk agglutination test with milk from twenty more of B.'s goats. The method adopted was the hanging drop, an equal amount of milk and emulsion being used, the drops being kept for twelve hours before coming to a negative conclusion. As the emulsion contained 0.5 per cent. phenol, it was not considered necessary to add an antiseptic to the milk. Immediately after my return from the farm I put up ten samples in this manner. No. 10 was a thin serous milk, and clumping all over was complete in half an hour. Samples of No. 10 were immediately posted to Pretoria and London. After twelve hours only a narrow margin of the other drops could be examined, owing to the presence of oil globules. Clumping round the margin was observed in Nos. 1, 3, 6 and 9. Next day, the cream having separated, all the samples except No. 10 were put up in hanging drops. The following was the result: Nos. 1, 6, 9, 11, 14, 19, positive in half an hour. Nos. 3, 18, positive after twelve hours. No. 12, feeble reaction after twelve hours.

Thus nine out of the twenty gave a positive reaction and one was doubtful.

The positive samples were sent to Pretoria along with two negative controls. They arrived fermented. Major Buist found practically the same results as I did, but expressed doubts as to their value, owing to the state of the milk. Regarding sample No. 10, which was sent first, he had no doubt.

In the "Reports of the Commission on Mediterranean Fever," Part IV.,¹ the conclusion is come to that the milk test is reliable. In no case in which the milk test was positive was the blood test found to be negative, although some cases of the converse occurred. On the other hand the probability is that the milk test as applied by me was not reliable; for 50 per cent. of one group gave positive reactions with the milk test, while only 10 per cent. of another group from the same herd reacted positively when the blood test was used. It is to be regretted that the individuals of the former group were not marked so that the behaviour of their sera might be ascertained afterwards.

Although no cultures of *M. melitensis* have yet been grown from the milk or blood of South African goats, the serum reactions obtained here, coupled with the abundant evidence as to the culpability of the goat collected in Malta, render it probable that the goat is a factor in the spread of the disease in South Africa, and may have been the medium through which the disease was introduced to the country. Some fruitless efforts were made to obtain information from the Agricultural Department of Cape Colony regarding the periods at which goats were imported into South Africa, and the countries from which they were imported.

It has been proved by the Commission on Mediterranean fever that dust infected with the urine of men and animals can act as a carrier of the disease.² There is also some evidence that mosquitoes can act as carriers of the germ, and it has been proved that they can infect animals.³ There is also some circumstantial evidence tending to show that man can be infected through the bite of a mosquito. In the district of Philippolis mosquitoes are not much in evidence, and can hardly be said to give serious trouble, unless it be during that rainy season which we have yet to see.

DISTRIBUTION OF UNDULANT FEVER IN SOUTH AFRICA.

With the object of ascertaining the distribution of undulant fever in South Africa, circulars were sent to medical practitioners in the Karoo portion of the Cape Colony, the Orange River Colony, Basutoland, Natal, and the Transvaal. A brief clinical description of undulant fever (after Birt and Lamb) was given, information as to the presence or absence of this type of fever, and as to the habits of the population in regard to goats' milk was requested, and an offer was made to test blood samples from suspected cases. So far as possible, a circular was sent to at least one practitioner in each district, with a request that it should be brought under the notice of neighbouring colleagues.

¹ Major W. H. Horrocks and Captain J. C. Kennedy, "Reports of Commission on Mediterranean Fever," Part IV., p. 45, and Dr. T. Zammit, p. 98.

² *Ibid.*, pp. 76, 81, and 187.

³ *Ibid.*, pp. 76, 81, and 187.

The following are the dates of sending, numbers sent, and number of replies received from each colony:—

Date	Colony	Number sent	Number of replies
March 13th, 1906.. ..	Cape Colony	47	25
June 12th, 1906	Orange River Colony..	62	22
" "	Basutoland	2	3
July 10th, 1906	Natal	30	8
July 16th, 1906	Transvaal	42	14

In Cape Colony the disease has been recognised clinically at Clanwilliam, Hopetown, Prieska, Upington, and Griquatown. The diagnosis has been confirmed by the agglutination test applied to two blood samples from Murraysburg, two from Richmond, two from Kenhardt, and one from Barkly West. There was some doubt whether the last case was not imported from the Orange River Colony.

Cases of "camp fever" were reported to have occurred in Kimberley during last season, but there was a difficulty in getting blood samples, because most of the patients had been sent to the coast. The question whether there is a disease, "camp fever," at Kimberley, which is neither undulant fever nor typhoid, has long remained unanswered. I have reason to believe that it will be investigated on the spot during next season.

In the Orange River Colony the disease has been recognised clinically at Bethulie, Springfontein, Luckhoff, Koffyfontein, Reddersburg and Vrede. The information regarding Reddersburg was given by Dr. Jones, of Barkly West, who said he had met with many cases at Reddersburg in the early 'nineties. The coincidence of positive and negative opinions at Koffyfontein requires explanation. Here there was a difference of notions about the same cases. Unfortunately, the gentleman in charge, who gave a negative opinion, could not be induced to send blood samples that the blood might be put to the test, notwithstanding repeated applications.

The diagnosis has been confirmed by the agglutination test applied to sixty-two blood samples from Philippolis, two from Fauresmith, and eight from Senekal.

Considering the prevalence of undulant fever in the south of the Orange River Colony, it is to be regretted that nothing can be said about the neighbouring portion of Cape Colony. Correspondence with Petrusville was broken off before a definite decision could be come to, and no replies were received from Philipstown, Colesberg or Aliwal North.

By the medical officers at Leribe, Maseru and Mohalieshoek, undulant fever is believed to be endemic in Basutoland.

The replies from Natal were all in the negative.

In the Transvaal undulant fever has been diagnosed clinically at Belfast and at Zoutpan.

Negative reactions were found in one blood sample from Boksborg (Transvaal), one from Leribe and one from Mohalieshoek (Basutoland), and one from Pietermaritzburg (Natal).

In concluding this section I have to tender my thanks to those gentlemen who were so kind as to supply me with information and material.

The period during which undulant fever has been endemic in South Africa is very uncertain. I have been informed by Dr. Long, of Maseru, that Dr. M. E. Leister, now practising in Lerryn, Cornwall, England, recognised the presence of undulant fever in the Orange Free State and Basutoland twelve years ago. Dr. Heinrich, Murraysburg, Cape Colony, has been meeting with cases of this type for nearly eight years, *i.e.*, the whole period of his residence at Murraysburg. Dr. Gibbon, of Prieska, reported that he had seen cases of this type many years ago, but that the disease is not endemic at Prieska now.

In the *British Medical Journal*, 1901, p. 941, Washbourn described two cases which he believed to resemble Malta fever more closely than any other disease. The clinical evidence presented by these cases does not exclude enteric fever, as it is met with in South Africa. Pyrexia in the one lasted only four or five weeks, in the other six or seven weeks. In both there was diarrhœa at the outset, and the motions were occasionally liquid or pultaceous during the course of the fever. In one the tongue was for the most part clean, and, so far as my experience goes, this is an important feature in many cases of undulant fever. Dr. Dodgson found the sera of both these patients negative to typhoid, and positive to Malta fever. Too much importance may be attached to the negative reactions, but if the positive tests were properly controlled, there can be no doubt about the diagnosis.

It is generally believed that several anomalous types of disease exist in South Africa. In the differentiation and assignment of these to their proper places, considerable progress has recently been made. Every step in that direction renders the remainder of the problem simpler. Here it seems advisable to discuss the question as to the identity or non-identity of undulant fever with diseases hitherto regarded as anomalous, whether as types of well-known diseases, such as typhoid fever, or as not being embraced under the established nomenclature of medicine.

Typhoid Fever.—That the prolonged symptomless forms of typhoid fever and undulant fever may be clinically indistinguishable throughout, there can be little doubt. That acute forms of both may at the outset be indistinguishable without a bacteriological test, is also extremely likely. That many cases of undulant fever have been returned as typhoids in the past is certain. My certainty is based upon the knowledge of my own erroneous practice for a year, and upon the confessions of others.

Malaria.—Malaria has been called "the refuge of ignorance." To distinguish undulant fever from malaria we have the bacteriological tests, the absence of rigors, the absence of benefit from quinine. The mistake of failing to make the distinction is more likely to be made in parts of South Africa where malaria is not endemic, than where it is well known.

Rheumatic fever is extremely rare in the district of Philippolis. I know not what its incidence is in other parts of South Africa where the climatic conditions are similar. Cases of undulant fever are diagnosed "rheumatic" in other parts of the world, and it would be strange if the same mistake were never made in South Africa. The Dutch names applied to undulant fever in Philippolis, if similarly applied elsewhere, may have been responsible for some confusion. These are "slepende koorts," and "zinking" or "zinkend koorts." Both are well suited to undulant fever, the former being applied to comparatively symptomless cases, the latter to the neuralgic forms. Now I understand that where malaria is endemic it is called "slepende koorts," and where rheumatic fever prevails it gets the name "zinking koorts."

Beri-beri.—A neighbouring practitioner was disposed to regard the Philippolis cases of undulant fever as beri-beri, until the contrary was proved. Doubtless the diagnosis of beri-beri where there is much neuritis and paraplegia would be a pardonable sin. On the other hand, few can doubt that the cases in Johannesburg described by Turner and Miller¹ were cases of true beri-beri. Certain more obscure cases of neuritis, which they did not feel justified in including in the series, might have been cases of undulant fever.

Epidemic Neuritis.—The cases of this type, described by Dr. John Muir,² are extremely puzzling, and seem to belong to no known category. The neuritis appeared several months after an epidemic of a disease resembling ptomaine poisoning, in which there had been a very high mortality.

Camp Fever.—Reference has already been made to the question whether there is an entity at Kimberley which requires to be classified separately. Dr. Mackenzie's paper on "Camp Fever"³ presents a good clinical picture of undulant fever. Dr. Mackenzie recognised the closeness of the analogy. This disease he stated to be prevalent over the whole Karoo, as well as in Kimberley. Dr. Mackenzie felt convinced that cases of scurvy in the mines were often associated with this fever. A similar association of scurvy with beri-beri has been noted.

Where anomalous types of scurvy occur in the future it is to be hoped that the claims to recognition of undulant fever and beri-beri will receive due consideration.

That primary uncomplicated scurvy has occurred in South Africa has been shown conclusively by Dr. N. McVicar⁴ and by Dr. D. M. Macrae, who has recently sent a paper on the subject for publication to the *British Medical Journal*.

¹ Drs. A. E. Miller and G. A. Turner, *Transvaal Medical Journal*, March, 1906, p. 256.

² Dr. John Muir, *South African Medical Record*, August 15th, 1905, p. 158.

³ Dr. J. E. Mackenzie, *ibid.*, October 15th, 1903, p. 127.

⁴ Dr. N. McVicar, *ibid.*, April 25th, 1906, p. 101.

Treatment.—Till quite recently the treatment of undulant fever was purely symptomatic. Dr. Reich,¹ of Senekal, has reported very favourably on the intravenous injection of collargol as a remedy in Mediterranean fever. He recommended an injection of 10 cc. of a 2 per cent. solution daily for three or four days. I have received his permission to state that, owing to severity of reactions experienced (vomiting and rigors), he has reduced the dosage and frequency as follows: 5 cc. every second day until four injections have been given. The treatment by injection of vaccines, *i.e.*, killed cultures of the virus, has been favourably reported on by Reid. It is based on the opsonic theory of Wright. The general practitioner would find it difficult to apply this treatment, for it involves the determining of the opsonic index from time to time in order that the effect of the injections may be gauged. If the strength of the agglutinins in the serum bears a direct relationship to the opsonic index, the procedure might be simplified by substituting the determination of the former for that of the latter.

Both the above-mentioned methods of treatment cannot be carried out unless the patient lives within a reasonable distance of his attendant. I have not yet had an opportunity of giving either a fair trial.

In conclusion, the main object of this paper is to show that undulant fever is widely distributed in South Africa, where it has been endemic for many years. That in all probability the importation of infected goats explains its introduction to this country, and that the goat is now one of the agencies through which it is spread.

To Lieutenant-Colonel Birt I owe a deep debt of gratitude for having ungrudgingly examined and reported on all the material sent to him, thus stamping the grounds of my conclusions with the great weight of his authority as a bacteriologist and pathologist.

[NOTE.—Since writing the above paper I have been informed by Lieutenant-Colonel Birt that he has succeeded in getting pure cultures of *M. melitensis* from two more blood samples sent by me in August. —P. D. S.]

¹ F. Reich, M.D., *Transvaal Medical Journal*, June, 1906.

Extracts, &c.

THE BEST METHOD OF FORMING AND REGISTERING A RESERVE OF RETIRED OFFICERS (R.A.M.C.), CIVIL MEDICAL MEN AND MALE NURSES, FOR SERVICE (A) AT HOME, (B) ABROAD, ON MOBILISATION.¹

BY MAJOR F. SMITH, D.S.O.

Royal Army Medical Corps.

Every officer of the Medical Service on the active list ought to be available for service in the field at short notice.

* * * * *

Officers of the Reserve are required, in the first instance, on the outbreak of war, to fill up any or every position now occupied by Royal Army Medical Corps officers at home or abroad on the peace establishment.

* * * * *

Should we have a war which draws upon our resources beyond the whole strength of the Royal Army Medical Corps, the Reserve will be required to find men for any of the field appointments which do not call for the possession of special administrative capacity in the holder. In extreme cases the Reserve must be prepared to furnish administrative officers for field service. The method of forming and registering the Reserve will be easiest discussed under three headings.

* * * * *

(A) *The Reserve of Retired Officers.*—The retired officer is at present liable for service up to the age of 55; the majority of retired officers are fit to serve up to 65.

The officer who joins the Reserve should be given a retaining fee. Bearing in mind that we have no right to expect the retired officer, any more than the civilian, to sacrifice his pecuniary interests on the altar of patriotism, it then becomes a business question as to what would be a sufficient retaining fee.

An alternative to this system is that every officer retired from the Royal Army Medical Corps should be liable to serve till 65 in the Reserve—an excellent alternative, too, but of no use to us at present. For such a condition cannot, in fairness, be made retrospective, and if put into the Royal Warrant to-day it will not begin to provide a Reserve until twenty years from the date of entry of the next batch of Lieutenants-on-Probation.

The changes in Army methods are so frequent that in a year or two of absence from military life the retired officer loses the run of things.

¹ Read at a meeting of the Portsmouth Military Medical Society on December 20th, 1906.

By way of remedy for this I have to propose a plan which would go a long way towards introducing content among Royal Army Medical Corps officers on the active list. Leave is now difficult to get in the Corps, more so, probably, than in any other branch of the Service. The remedy is, to keep the retired officers up-to-date in Service matters, by employing them for short periods, so as to allow a proportion of active-list officers to take leave.

The Reserve might also be utilised to release regular officers for training with troops. Officers cannot be spared for training under present conditions, and this state of affairs is not good for either the Royal Army Medical Corps or the rest of the Army.

* * * * *

All officers of the Royal Army Medical Corps (Reserve) should be of the same status, rank for rank. There should be no invidious distinctions between retired officers and other members of the Reserve, though the fact of the retired officers having served should not be lost sight of.

The retired officers in the Reserve should be of all ranks. With a view to keeping these officers on a level with their brethren on the active list, they should be eligible for promotion in the Reserve—promotion to be by selection tempered with consideration for seniority.

Any medical officer who resigns his commission after not less than six months' service on the active list, or who retires with a gratuity, or on retired pay, should be eligible to apply through the Director-General, Army Medical Service, for appointment to the Reserve. If approved the officer should be gazetted into the Reserve in the rank which he held on leaving the Regular Service. These officers will have an initial advantage over non-regular members of the Reserve, as concerns position on the roster—only a minority, indeed, will join the Reserve with a rank below that of Lieutenant-Colonel. Officers who resign their commissions before they have completed six months' service in the Regular Army should be eligible to join the Reserve only as civil members,¹ but should be allowed to count their Regular service as part of the training period described further on, provided such service has been on full pay.

The Reserve pay, over and above pension, should be as follows :—

	For General Service	For Service in Europe	For Service only in the Country in which living—either at Home or Abroad
	£	£	£
Surgeon-General	100	80	70
Colonel	90	70	65
Lieutenant-Colonel (selected) ..	80	65	60
Lieutenant-Colonel	75	62	57
Major	70	60	55
Captain	60	55	50
Lieutenant	50	45	40
2nd Lieutenant ¹	40	35	30 ¹

¹ For explanation of this rank see under "Reserve of Civil Medical Men."

Every member of the Reserve must be domiciled in British territory—this to be the only restriction as to place of abode.

Members of the Reserve to be registered by the Director-General as well as by the Administrative Medical Officer and Principal Medical Officer of each district or command. It should be the duty of the Administrative Medical Officer to keep the record up to date in regard to the whereabouts, &c., of the members. On the date of being gazetted to the Reserve the member should receive his retaining fee in advance, and afterwards on the same date in each year of service in the Reserve. A medical certificate of fitness, signed by a medical officer on the active list of the Army, will be produced as a voucher for each annual payment. In time of peace a Reserve officer should not be called upon to serve out of the district in which he customarily resides, but he may be allowed to serve elsewhere at his own request. No officer to be obliged to serve for more than one month in any year in time of peace, but at his own request, if his services be required and no other members are available, he might be allowed to serve for a longer period. No officer should be allowed to serve for more than two years without putting in one month of duty, such duty to be ordinary duty, not drill. When a state of war exists, members of the Reserve should be liable to be called out for service in any part of the area in which they had contracted to serve—the King's proclamation that a state of war exists being a sufficient authority for calling out the whole or any portion of the Reserve for service while the war lasts. Officers should count all service when called out, either during peace or war, as service on the active list, and should add this to their previous Army service for the purpose of fixing rates of pay and retired pay. Officers should draw the full pay and allowances of their rank when called out—rank in the Reserve counting as Army rank for this purpose, as well as for wound pensions, widows' pensions and so forth. Rank in the Reserve should be equal in every respect to Army rank for discipline. Officers of the Reserve to receive retired pay as follows: After twenty-five years' service, half the Reserve pay. For any less period than twenty-five years, one-fiftieth of the Reserve pay for each year served—provided that the officer has thirty years' actual service of all kinds, or has been retired for age, or invalided on account of disease or injury contracted in and by reason of military service. No deductions to be made from the Reserve service for periods when called out for Army service. Officers who have served twenty years in the Reserve, or who are retired from the Reserve under the age clause, after not less than ten years' service in the Reserve, to be eligible for a special decoration granted by the King and entitling them to use the letters R.D. after their names. A few of the more highly placed or distinguished officers of the Reserve should be recommended for companionship or higher positions in the Orders of Knighthood.

Having formed and registered the Reserve it will remain to include the members in our mobilisation scheme—to have each officer told off to the position he will have to occupy on mobilisation. Such a Reserve, under a not too harsh management, ought to become popular. There is no reason why it should not be able to take up all the administrative appointments and thus release the Royal Army Medical Corps for active service.

The uniform of the Reserve of retired officers to be the same as that of the Regular Service. The main points of the scheme for a Reserve of retired Royal Army Medical Corps officers as above set forth are:—(1) Payment of retaining fees according to rank and according to extent of services contracted for; (2) employment for short periods on full pay in peace time by way of keeping the officers up to date; (3) promotion in the Reserve; (4) service when called up in peace or war to count for increased Army retired pay; (5) service in the Reserve to count towards Reserve retired pay; (6) officers of the Reserve to rank with Regular officers for discipline and, when called out on actual military service, for wound pensions, widows' pensions, &c., as well as for pay and allowances; (7) officers of the Reserve to be eligible for a special decoration.

(B) Reserve of Civil Medical Men.—In forming the Reserve of civil medical men there are a few main requirements to be borne in mind, thus: (1) The appeal must be made more to pocket and pride than to patriotism—it would be unreasonable to expect medical men to be more self-sacrificing than their contemporaries in other professions; (2) the remuneration must be in proper proportion to the value of the services contracted for and to the possible loss through being called out—it is obvious that the established practitioner will not be tempted out by the same honorarium which would attract the man newly placed on the register; (3) the military rank accorded to each member must be equivalent to the professional position which he holds at the time of appointment; (4) military training must interfere as little as possible with the civil professional work of the members of the Reserve; (5) the whole expense of training must be borne by the public.

Militia and Volunteer Officers should be allowed to join the Royal Army Medical Corps (Reserve).

Young medical men at the outset of their career are the ideal material out of which to form Reserves. They are, too, more likely than older men to join and to be able to afford time for training. Our first reserve men cannot be taken only from the newly qualified, for if they were it would be such a long time before the Reserve attained any considerable numerical strength. The suggested constitution of the reserve of civil medical men is as follows: Ranks of members—Surgeon-General, Colonel, Lieutenant-Colonel (selected), Lieutenant-Colonel, Major, Captain, Lieutenant, 2nd Lieutenant.

Appointment.—Qualified medical men who pass a modified physical test as to soundness, and who are not more than 60 years of age, may be appointed during the first five years of the Reserve's existence; when five years have elapsed, forty years should be the limit of age on joining. I may remind the reader that among the most active, hard-working medical men in South Africa were some nearer 70 than 60 years of age, managing National Hospitals and so forth. Only energetic men such as these would want to join at the age of 60. Pay and allowances, rewards, honours and promotion to be the same as for retired Royal Army Medical Corps officers. The ranks of individual members on first appointment to be decided by the Director-General, assisted by the Advisory Board. A leading consultant would expect to be made a Surgeon-General or Colonel, and so on down the scale. After the Reserve has been five years in existence, no first appointment to be made in higher rank than that of Captain, and the usual rule to be that the rank on joining shall be 2nd Lieutenant.

In order to give confidence in the Advisory Board, two additional members should be appointed to it, one from the ranks of the retired Royal Army Medical Corps officers in the Reserve, and one from the Reserve of civil medical men. An additional King's Honorary Physician and an additional King's Honorary Surgeon should be added to the establishment of these appointments, in order that one of each may be appointed from the Reserve of civil medical men.

The question of command seems the crux of the whole question. But this need not really deter us. To ask a London consulting surgeon to take over the duties of a Principal Medical Officer Lines of Communication would be to place him in a false position. There is already precedent for according rank without command—the Colonels of Army Service Corps serving under a former departmental warrant, for instance. There are many cases, too, in which the officers commanding a garrison or force on land or sea are not the highest in rank of the officers present and doing duty in the garrison or force. If all officers who join with a higher rank than that of Captain are placed on a supernumerary list and do not take command in the Corps unless specially asked to do so, there will be no trouble in working smoothly. In every other way the officers of the Reserve of civil medical men should rank with Regular officers. Under the system of training, to be explained below, the officers who join the Reserve in the lower ranks will be fit to exercise command, in emergency by the time they reach the higher ranks. In any case, there is rarely difficulty in arranging matters by posting the officers advisedly (just as we arrange for Regular officers now), so long as the Principal Medical Officer, Army, be the recognised head of affairs, no matter what his rank.

Uniform.—The field service uniform of the Royal Army Medical Corps with "Res" on the collar, provided by the public, along with a field kit.

No other article of uniform to be compulsory, though uniform as for the Royal Army Medical Corps may be permitted at the wearers' expense. Officers of the Reserve to be provided with horses and saddlery at the public expense when their duties require them to be mounted.

Training.—Those members who join the Reserve during the first five years after its formation, with a higher rank than that of Captain, need not be compelled to undergo any training, but should be invited to wear their uniform during short periods of attachment to the Royal Army Medical Corps for duty appropriate to their rank.

All other officers, except those who have completed training in the Regular Service, to be attached to the Royal Army Medical Corps for six months on appointment, and to receive pay and allowances at Royal Army Medical Corps rates during the period (2nd Lieutenants to receive the same pay as Lieutenants). The training during this period to be apportioned as follows:—

Two months at the R.A.M. College.

Two " " R.A.M.C. Dépôt.

Two " " Headquarter Hospital of a district.

There should be an examination at the end of each of these periods—similar to the examination of Royal Army Medical Corps Lieutenants-on-Probation. To the marks so gained should be added marks by the Commandant of the College, the Officer Commanding Dépôt and the Officer Commanding Military Hospital, for general efficiency and Service capacity. The officers should be gazetted in the order of their combined marks, and should be given a commission dating from the time they joined the College, or from the date on which they were individually accepted as candidates. Officers should afterwards be allowed and encouraged to come out for a fortnight's training annually on full pay, and every opportunity should be taken of employing them in place of Regular officers on leave, &c., in the manner set out under "Reserve of retired Royal Army Medical Corps Officers." Every officer who has not been up for duty or training for at least a fortnight every two years to be suspended.

The rank of these officers should always be used as a title, thus: Captain H. Jones, R.A.M.C. (Reserve), and the officers should be encouraged to regard their rank as an honourable distinction and to employ it habitually. Having due regard to any limitations above-mentioned, the duties of this Reserve are as set forth for retired Royal Army Medical Corps officers; they and the retired Royal Army Medical Corps officers of the Reserve form one and the same Royal Army Medical Corps (Reserve).

The Reserve of civil medical men to be registered by the Director-General, Principal Medical Officers, and Administrative Medical Officers, as detailed for the Reserve of retired officers. Similarly, each member should be told off to his place in the mobilisation scheme.

104 *Formation of Reserve of Retired Officers, R.A.M.C., &c.*

A Reserve such as I have sketched would, I feel sure, be easily filled—would have a military spirit—a feeling of comradeship with ourselves. If we receive it with open hearts we shall be helping to create an efficient Army Medical Service ready for any emergency, and a Reserve which will work loyally side by side with ourselves for the good of the soldier, the Army, and the country, as well as for the honour and glory of the Royal Army Medical Corps, of which it will be by no means the least important part.

* * * *

(C) *Reserve of Male Nurses (Royal Army Medical Corps Reserve).*—Nursing is not a popular occupation among men. The male nurse is not required in the civil hospital, so we are not likely to get the civil hospitals to take up the duty of training male nurses. Military hospitals must be the training schools for our Reserve. The civilian who is willing to be trained to nurse soldiers would probably want to join the Corps straight away—so unless we take men who are not up to the physical standard of the Army, or who are over age, we shall not get men at all, so long as the Army is open for recruits. Real nurses cannot be made out of ordinary men except by long training. Moderately skilful attendants cannot be produced by less than, say, six months' instruction. There is one class from which we might get a Reserve of reliable men, and that is the old soldier class. The men who used to join Class D¹ of the Army Reserve, and who are now lost to the Service altogether, unless they are serving in the Militia, would no doubt provide a good many men for us.

The Reserve I propose should consist primarily of men who have served their twelve years in the Army and Army Reserve; and, in the second place, of men who are too old for the Army. In the third place, we might, if necessary, include men who, though suffering from no organic disease, are below the physical standard for the Army.

Duties.—The main duty of the Reserve should be: To take, in our hospitals, the places of Regular men ordered out on active service. In case of necessity, but not so long as Royal Army Medical Corps Regulars are available, they should be employed in hospital ships, and at the base, and on the lines of communication. In extreme cases it might come about that they would be required with the mobile Army, but by that time many of them would have served some time at home and at the base, on the lines of communication and in ships. These men should be advanced and their places taken by fresh Reserves.

* * * *

Conditions of Appointment, &c.

Age on Joining.—Civilians, 18 to 35; time-expired soldiers, up to 45.

Retirement.—At the age of 50, or voluntarily at any time before that age.

Training.—Six months would be enough for the initial course of instruction. A longer course would be better, but is unlikely to be

¹ Class D opens again this month.—EDITOR.

sanctioned. Moreover, the longer the course of training the less ease there will be in getting civilian members. The members should not become soldiers living in barracks, but stay outside wherever they like, coming in daily to their work. Training to be undertaken by the Royal Army Medical Corps and Queen Alexandra's Imperial Military Nursing Service of all ranks at the larger military hospitals in every district—the staffs being increased if necessary in proportion to the extra work thrown on them. A separately organised staff for instruction is not required, or, indeed, desirable. The training in nursing to be carried on from the very beginning of the six months, without any period of preparatory drill. A few afternoon parades to teach the men to wear their uniform, to march and salute, are all that is necessary. The uniform need only be worn at work. In the case of men who had belonged to the Nursing Section of the Royal Army Medical Corps, the six months' training might be dispensed with, as also in the case of men who have been trained in the Reserve and rejoin after having voluntarily left it. At any time during the six months' training a member may be discharged the Service by the Administrative Medical Officer, on a written report by the Officer Commanding and the Matron of the hospital that his retention is undesirable. After having been trained and approved, a member should not be discharged against his will except by the Principal Medical Officer of the command.

A member must put in a week of continuous duty every year after the termination of his first six months. This week may be spent in any occupied military hospital of not less than twenty beds and at any time chosen by the man.

Pay.—£1 weekly when actually up for duty in time of peace, in whatever part of His Majesty's dominions he may be residing. When called up in time of war to take the places, in military hospitals, of men who have gone on Service, the pay to be £1 a week. When called out for duty with a field force or on a hospital ship, the pay and emoluments to be those of a second class orderly, Royal Army Medical Corps (Nursing Section), with wound pensions, pensions for illness or injury of a permanent nature due to military service, widows' pensions or gratuities, and so forth, the same as for privates of the Royal Army Medical Corps.

The male nurse of the Reserve shall be styled "Hospital Attendant." There shall be only one grade in the Reserve.

The pay while the "Hospital Attendant" is in Reserve to be small—2s. a week, paid quarterly or annually, subject to physical efficiency.

The principal inducement to join the Reserve is to be an old-age pension on attaining the age of 60. This would prove very attractive. The pension should be 1s. a day. The certainty of having 7s. a week in his old age would mean a great deal to the working man. For this pension, thirty years' service in the Reserve should be necessary, but previous service in the Army and Army Reserve, in the case of a man not drawing an Army pension, to be allowed to count as service in the

Reserve, provided that less than five years' service in the Reserve of male nurses shall not count.

The old-age pension scale, then, would be as follows:—

Total Service.	Old-age Pension.
15	6d.
20	8d.
25	10d.
30	1s.

Uniform.—The field service uniform of a 2nd class orderly of the Royal Army Medical Corps, with the letters "Res" on the collar.

The registration of the Reserve to be with the Administrative Medical Officers of districts and commands, as also with the Officer in Charge of Royal Army Medical Corps' Records.

In a discussion which followed the paper, Colonel J. J. Morris, A.M.O., Lieutenant-Colonel Bedford, C.M.G., and Lieutenant-Colonel Thomson took part.

Lieutenant-Colonel Bedford pointed out that the reader of the paper had included in his scheme for retired officers some conditions already in existence. He objected to the proposal that a qualified medical man should serve in so low a rank as 2nd Lieutenant, no matter how short the period, and he thought that the scheme did not take sufficient account of the Militia, Volunteers, and various Voluntary Aid Associations.

The idea of most of the officers present seemed to be that few retired officers would rejoin, especially if the gains and possible losses were not very definitely laid down beforehand. The bare possibility of having ultimately a smaller pension than that held when recalled to service on the active list, was thought to be the greatest deterrent to retired officers.

Major Smith replied to the remarks on the subject of the paper.

Reviews.

THE CAUSE AND PREVENTION OF BERI-BERI. By W. Leonard Braddon, M.B., B.S., F.R.C.S., State Surgeon, Negri Sembilan, Federated Malay States. London: Rebman, Ltd. Pp. 544. Price 21s. net.

According to the author, "few diseases are attended with the good fortune that the demonstration of their cause is at the same time the indication of the remedy. But this may be said to be the case with beri-beri. For, speaking generally, it may be said that all that is needful is to secure a liberal and wholesome dietary, to avoid the use of rice or its extracts, and the disease will not appear.

"Where rice cannot be abandoned, where it is the staple food, all that is necessary is to avoid the use of uncured (stale cleaned white) rice, to eat only the fresh or cured sort, and freedom from the disease will be equally secured.

"It is true that in a certain proportion—i.e., when it forms not more than one-third of the total bulk of food eaten—even toxic rice has been

taken with impunity; and in prisons and public institutions, were it a necessity to use stale uncured, instead of other sorts of rice, its deleterious action might thus be counteracted by largely diluting it with other food. Such necessity need, however, rarely arise, since both fresh and cured are as easily obtained as stale rice.

"But employers generally could not be compelled, often could not, indeed, afford to provide the additional articles of food required to dilute toxic rice to this extent, and it is certain that coolies, badly paid as sinkbehs are, would not do so. The only practical way, therefore, to prevent beri-beri in a community, is for the State to prohibit the sale of any rice which is not either freshly made, or which has not been 'cured,' by boiling or heating in the husk before stripping it. There would be no difficulty in adopting the latter measure; it is already carried out on a large scale in several quarters.

"Simple as these remedies are, nothing more is wanted, as nothing less will suffice, to banish from the countries which it now infests the blight of beri-beri."

Any one interested in beri-beri should certainly study this monograph, which appears to discuss this disease from every possible point of view.

THE PROBABLE ORIGIN OF SYPHILIS IN EUROPE. By L. Bousfield, M.A., M.D.Cantab. London: Printed and published by S. F. Hodson, Rupert Street, W. Price 2s.

In the preface of this pamphlet the author expresses a hope that it will be considered a concise and compact history of the origin of syphilis in Europe, and no doubt most readers of it will give it this credit.

Dr. Bousfield has evidently gone well into his subject and carefully sifted the evidence he has been able to collect from the limited supply of literature at his disposal, and has produced a work which cannot fail to be of the greatest help to all those who are interested in the subject under review, and is well worthy of their perusal.

Current Literature.

Ehrlich's Recent Work on the Chemical Therapy of Trypanosomiasis.—In a lecture to the Berlin Medical Society, published in Nos. 9 to 12 of the *Berliner Klinisch Wochenschrift*, March, 1907, Ehrlich gives an account of his recent work on this subject. He considers that the days of empirical therapy are now over, and it is necessary to enquire into the "How and Why" of treatment. The problem which he sets before himself in this specific chemical therapy is to find a substance which will be taken up by definite parasites and kill them without too great injury to the host. He finds in trypanosomes convenient parasites for experiment. Ehrlich points out that the treatment of trypanosomiasis hitherto adopted produces only "half immunity." The animals appear well, but still carry the parasites in small numbers in their body. Ehrlich states that Greig and Gray, and later Koch, have shown that the same

view holds for sleeping sickness. He rightly says "that the patient is only really cured when there is not another parasite in the body, *i.e.*, completely sterilised." He then considers what he calls the therapeutic biology of the parasite, and firstly the production of strains of trypanosomes having the peculiarity of tolerance to drugs. By feeding mice on fuchsin the nagana trypanosomes disappeared from the blood. After weeks the parasites appeared in the blood, but could be removed by a second feeding; but however, there came a point at which the free intervals always got shorter, until finally the feeding was fruitless. Ehrlich states that this phenomenon can be explained in one of two ways: (1) Through long feeding with fuchsin the organism of the mouse had, either by synthesis, destruction or increased elimination, rendered the fuchsin inactive, or (2) the long treatment with fuchsin caused an alteration in the parasite, producing a strain resistant to fuchsin. The differentiation was simple. It was only necessary to inoculate a normal mouse with this resistant strain and then to treat with fuchsin. It was found, as suspected, that the strain of parasite had acquired the property of increased resistance to fuchsin. Röhl has shown that animals fed for a short time previously on fuchsin and then infected with the original nagana strain do not become infected. Ehrlich in a footnote suggests as a prophylactic to those who are travelling in areas where sleeping sickness and *Glossina palpalis* exist, feeding for a week previously on fuchsin combined with atoxyl. He thinks feeding preferable to subcutaneous inoculation, not only because less painful, but because the fuchsin is not so rapidly eliminated. Browning has obtained strains of trypanosomes resistant to: (1) atoxyl; (2) trypanred; (3) the combination of Mesnil and Nicolle, active trypanblue; and (4) atoxyl and trypanblue combined. From these experiments, therefore, the important fact emerges that strains of trypanosomes resistant to all the known destroying agents have been obtained, and as others are discovered it is possible that strains resistant to them will be produced. The limit of tolerance of these strains of trypanosomes is difficult to determine, as the host can only stand a certain amount of the drug, *e.g.*, atoxyl. Ehrlich has never been able, either by injection or feeding, to cure an animal infected with an atoxyl-resistant strain of trypanosome. When these strains resistant to drugs are injected into healthy normal animals, Röhl found that after thirty-six passages through normal mice the fuchsin strain of trypanosome had still retained its property of resistance to the drug. The atoxyl strain had its complete resistance to the drug (atoxyl) after nine and three-quarter months, 103 passages. Proceeding further with his chemico-therapeutic studies, Ehrlich determined that a strain of trypanosome resistant to atoxyl had not a trace of resistance to other drugs. Hence this acquired property of the trypanosome, *i.e.*, atoxyl tolerance, was absolutely specific. Cases of sleeping sickness have been treated for months and years without result. Ehrlich considers failure, in these cases, is due to the production of strains tolerant to the drug. He is of opinion that it is most important to determine, in these cases, by cultivation in animals, whether the strain of parasite is resistant to the arsenic or not. If a strain is found to be resistant it is essential to employ a combination of the known dyes acting on trypanosomes and atoxyl. He concludes, "that should it be confirmed that such atoxyl-tolerant strains

of trypanosomes can be produced in cases of sleeping sickness undergoing treatment with atoxyl, it becomes an urgent necessity to bring about the sterilisation in one act, since it is not to be lost sight of that the occurrence and formation of an atoxyl strain, which, as we have seen, can retain its resistance for months, may mean a great danger and considerable increase of difficulty in the therapy, since, perhaps, the intermediate host, the *Glossina*, may not be able to break the acquired peculiarity of atoxyl tolerance." Ehrlich continues the investigation of other bodies destructive to trypanosomes. He states that to determine which chemical is best suited to particular strains, he will at any time, as he has done with trypanred, place others at the disposal of investigators on this subject.

The above observations of Ehrlich indicate the difficulties in the way of obtaining an agent capable of destroying the trypanosome in the animal body without too great injury to the host. We trust that Ehrlich may before long accomplish the task of finding such a chemical body.

E. D. W. G.

The Preparation of Catgut.—We would direct the attention of all our readers who practise surgery to an article "on Iodine-Spirit Catgut," by Dr. J. Scott Riddell, in the *British Medical Journal* of April 6, 1907, p. 809, wherein he strongly recommended a method known as Salkindsohn's; he has the advantage of two years' experience to support his opinion. Briefly, the method consists in leaving the catgut in a solution of tincture of iodine (B.P.) 1 part, proof spirit 15 parts, for a minimum of eight days; it is then sterile, strong and pliable; it may be left in the solution indefinitely; there are a few further details, for which attention is directed to the original paper. We have been using iodine-water catgut for more than two years; it is satisfactory, but the iodine-spirit catgut is even better. Possibly the last word has not yet been spoken about catgut preparation, but this present method is quite satisfactory, is absolutely simple, and is within the reach of all.

M. P. H

Physical Examination of Recruits in the Swiss Army.—In the Official Report of the Federal Statistical Bureau for 1907, the attention of the Swiss schools has been drawn to the need of rational physical development of boys, in connection with the examinations instituted by the military department in its special instruction of May 20th, 1905, regarding physical examinations. This instruction lays down three exercises by which recruits are to be tested, namely, long jumping, lifting weights, and running. The selection of these exercises has been made because they can be applied everywhere and enable the examiner to test the endurance, strength, and physical alertness (*adresse*) of the recruits in the shortest possible time. All recruits, who are obliged to pass an educational test, are submitted to this physical test, with the exception of those who have some apparent constitutional defect or are exempted by a medical board. In testing the recruits a classification of "good," "moderate," and "poor," is made as follows:—

<i>Long jump</i> (distance jumped).			
Good	=	capable of jumping	3.5 m. (11 feet 1 inch or more).
Moderate	=	" "	2.4 m. to 3.5 m. (8 feet 6 inches to 11 feet 1 inch).
Poor	=	" "	up to 2.4 m. (8 feet 6 inches).

Lifting weights (i.e., dumb-bells of 17 kilogrammes, in right and left hand together).

Good = capable of raising the weight 8 times.
 Moderate = " " " 5 to 7 times.
 Poor = " " " up to 4 times.

Running (time taken to run 80 m. = about 88 yards).

Good = capable of running the distance in 11·9 seconds.
 Moderate = " " " 12 to 13·9 seconds.
 Poor = " " " 14 seconds.

Of 27,416 men of the 1905 recruit contingent, 26,277 were examined according to these tests, and 1,139 exempted, or submitted to a modified examination. The results were as follows:—

Classification	Long jump	Lifting weights	Running
Good ..	3,545	14,879	2,295
Moderate ..	15,792	3,904	12,262
Poor ..	6,940	7,494	11,720
	26,277	26 277	26,277

These results are not considered brilliant; expressed in percentages they are as follows:—

Classification	Long jump	Lifting weights	Running
Good ..	14 per cent.	57 per cent.	9 per cent.
Moderate ..	60 " "	15 " "	47 " "
Poor..	26 " "	28 " "	44 " "

The conclusion from these results is that the evidence of pure physical strength, as shown by weight lifting, is fairly satisfactory, but that alertness or fitness, as shown by the running tests, is not. In other words, the training has been at fault. This is considered all the more remarkable because of the fact that 18,026, or 68·6 per cent., of the men examined, had received regular gymnastic instruction, 11 per cent. belonged to a gymnastic society, 3 per cent. to a sports club, 16 per cent. had undergone preliminary military training, and 46 per cent. had undergone school gymnastics. Twenty-eight per cent. had done no physical exercise. Those who had undergone regular gymnastic training gave the best results, but the members of the sports clubs beat them in the running tests. While 39 per cent. of the gymnasts got "good" in long jumping, and 22 per cent. in running, only 4 per cent. of those without regular physical training got "good" in these tests.

The Swiss Federal Government is at present subsidising gymnastic instructors, and sending some to study the Swedish system of physical training. It may be interesting to note, in this connection, that an exhaustive statistical report on the increase of cardiac disorders in the Swiss Army has recently appeared.

W. G. M.

Note. — In Switzerland there are Government regulations on the subject of *Instruction Militaire Préparatoire*, i.e., preliminary instruction of youths previous to their arriving at the years for military service. This instruction is in three categories: (1) Obligatory gymnastic instruction in the cantonal schools, i.e., up to the age of 15 or 16. The Federal Government exercises strict supervision over these. (2) Voluntary physical training, after leaving school, i.e., between 16 and 19 years of age. The Government encourages the formation of gymnastic and sports clubs for this purpose, organises courses for instructors, and prescribes the nature

of gymnastic training; but a youth's belonging or not to one of these clubs or going through courses of training is entirely voluntary; (3) voluntary cadet corps, for rifle shooting and military drill. The Government subsidises these corps.

It is the second of these, namely, the preparatory military training by means of gymnastic and sports clubs, that the physical examination tests of recruits specially refer to.

W. G. M.

Treatment of Snake-bite by Injection of Permanganate of Potash or Calcium Chloride (*Archiv. für Schiffs- und Tropen-Hygiene*, 1907, vol. xi, 6, p. 212).—An article by Brieger and Krause proves by experiment that permanganate of potash and calcium chloride in no way counteract the effect of snake-poison by injections. They are of use only for disinfection and washing out poison not yet absorbed. An anti-toxin serum is the only sure remedy for absorbed snake toxins.

W. G. M.

Russian Losses in the Manchurian Campaign.—An article by Dr. Schaeffer in the *Revue Mil. des Armées Étrangères*, vol. 69, 1907, p. 294, gives statistics published by the *Russki-Invalid* (No. 256 of 1906), certain results of Dr. Schaeffer's own studies, and various non-official information. Dr. Schaeffer's conclusions are:—

(1) The casualties are equal to but not greater than in 1870, in proportion to strength.

(2) The number of "killed" is not higher than in former wars.

(3) The number of subsequent deaths from wounds is much lower than previously.

(4) Recovery is usually so rapid that a very large number return to the ranks in a few weeks.

(5) The effects of artillery fire are higher than in 1870. Simple wounds by artillery fire are less serious than those of small calibre bullets.

(6) Generally surgical operations are not required in the dressing stations, and hæmorrhage almost always ceases of its own accord.

From lectures given in the Russian Staff College the following casualties for battles are obtained.

Battle	RUSSIAN			JAPANESE		
	Strength	Killed, Wounded, and Missing		Strength	Killed, Wounded, and Missing	
		Officers	Men		Officers	Men
Turentchen ..	10,000	73	2,324	28,000	..	1,200
Wa-fang-chow ..	45,000	131	3,577	45,000	47	913
Liaoyang ..	150,000	?	15,000	135,000	?	23,500
Shaho ..	200,000	?	35,000	170,000	?	19,500
Kei-Kontai (Sandepu)	90,000	?	22,800	65,000	?	8,700
Mukden—	320,000	2,185	89,305	235,000	?	69,000
Killed ..	..	(273)	(8,626)	..	..	..
Wounded ..	..	(1,576)	(49,426)	..	..	..
Missing ..	..	(336)	(31,253)	..	..	..

The conclusions of the reviewer are :—

(1) On the Russian side the total mean casualties for the infantry regiments vary between 10 to 40 per cent. (or about 20 per cent. as average) for all battles; for artillery and cavalry about 10 per cent. The proportion of killed to wounded (excluding missing) is from 1 to 4 up to 1 to 7.

(2) The proportion of wounded by rifle fire is about 83 per cent., as compared with 14 per cent. by artillery fire, and 3 per cent. by side-arms.

(3) Three-quarters of the wounded were able to walk.

(4) Forty-five per cent. could return to the ranks after three weeks.

(5) By adopting measures of hygiene suitable to the climate, and providing for feeding the men by means of wheeled kitchens, the number of Russian sick was less than in time of peace.

(6) By means of the first field dressing with each soldier immediate surgical operations have been vastly reduced.

(7) The practice of evacuating completely (*à outrance*), as practised by the Russians in the Manchurian battlefields, so far from increasing the number of deaths amongst the wounded, had, on the contrary, a happy influence on the results of wounds

W. G. M.

Correspondence.

DR. M. S. PEMBREY AND DIAPHRAGMATIC DRILL.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—I judge from Dr. Pembrey's attack on my paper that he is under the impression that diaphragmatic drill is a new system of breathing. As it is nothing of the kind, and thinking that some of our other readers may fall into the same error, I hasten to assure them that the exercises are only intended for those who need some assistance in correcting a vitiated type of respiration. The drill is neither more nor less than the movements which take place in *normal* breathing, and obviously those who breathe correctly have no use for it.

We are told that "breathing is strictly the intake of oxygen and the output of carbon dioxide." Is this so? As Keith poetically expresses it, "every organ in the body swings with the respiratory tide," that is, provided the diaphragm is brought into active use. Without a more or less full and free movement of this muscle, the apices of the lungs cannot be efficiently ventilated, nor can the adequate activity of the liver and other abdominal organs be maintained. The heart also looks to the respiratory movements for assistance in carrying out its functions. (Johannes Müller has shown that quiet nasal breathing, *i.e.*, diaphragmatic, furthers not only the return of venous blood to the right heart, but also the pulmonary circulation. Whereas, in quiet oral breathing,

owing to the freedom with which air enters the lungs, there is scarcely any negative pressure, and consequently the circulation receives very little assistance.) Lastly, there is the phenomenon of voice which is largely dependent upon the air blast. Breathing, as a matter of fact, has very far-reaching effects, and faulty, lazy, or careless breathing makes for lowered vitality.

Speech and song, both natural attributes of man, are muscular exercises which result in the production of carbon dioxide. And carbon dioxide, so Dr. Pembrey tells us, regulates the depth and frequency of the ventilation of the lungs; yet a speaker or singer learns to regulate the breathing so as not to interfere with his singing or speaking by an ill-timed inspiration. Asthmatic patients also offer us a proof of the fact that movements which are usually involuntary can be held in check and regulated, for they learn to resist the impulse which urges every oppressed man to quicken the respiratory movements, and better their condition by slowing the rhythm of respiration, and prolong it as much as possible. Again, persons who have been emphysematous for years *know* how to breathe to better advantage than they did at the commencement of the disease. By slowing their breathing they render it more efficient. Expert runners, boxers, cyclists, &c., also learn to control their breathing, whilst the novice, as a rule, soon gets out of breath, owing to too precipitate and shallow movements of the thorax; experienced runners learn to control their bellows, and many do so according to methodically enunciated principles; for example, Arthur Duffey, the American sprinter, runs the hundred yards in two breaths—the first he takes at the start and the other about twenty-five yards from the tape—so it is very evident that, whatever the condition may have been at birth, the depth and frequency of the ventilation of the lungs is not altogether regulated by the carbon dioxide in the blood. As a rule, oral breathing, which is more often than not chiefly intercostal in character, makes for shallow, jerky movements. Whereas nasal respiration, *i.e.*, diaphragmatic breathing, makes for deep rhythmical movements. And which of these two systems of breathing becomes habitual rests almost entirely in the hands of the individual himself.

Experience has shown that to follow our instincts, as Dr. Pembrey advises us to, is not always a very wise proceeding. And the slap-dash-go-as-you-please method of physical education, advocated by him, has not always produced the best results, at any rate under modern civilised conditions. There is a method or "form" in walking, running, and even in breathing, and "second wind" is an excellent example of "form" in breathing. The irregular, more or less shallow movements of the chest which were before a prominent feature, are now replaced by regular, deeper and slower chest movements.

Up-to-date trainers for athletic sports leave nothing to chance. Most of them are observant and wonderfully quick at putting two and two together. They are aware of the fact that inspiration and expiration are within reasonable limits controllable acts, and that shallow, irregular movements of the chest are the precursors of breathlessness. So they very rightly argue that the advent of breathlessness will be considerably delayed by making the breathing deeper, fuller and more rhythmical, and the energies of their pupils are directed towards the attainment of this end. Duffey the sprinter, W. G. George (the holder of the mile and other long distance records) Fitzsimmons the boxer, G. A. Olley, the long distance champion cyclist of England, and a host of others, recommend the practice of deep breathing (lower chest) quite apart from sports themselves. And unlike Dr. Pembrey, who tells us "to resist fatigue by experiencing fatigue," they train to resist fatigue, but in the training stop short of fatigue. Teachers of voice production also consider it essential for their pupils to learn how to breathe correctly before proceeding further in voice culture. And many enlightened physicians look upon the promotion of correct respiratory habits as an essential part of treatment in convalescence after illness, &c. So it is difficult to understand how Dr. Pembrey can state that "there is no evidence to show that breathing exercises are of the slightest value."

With regard to Dr. Pembrey's request for the results of experiments showing that soldiers after a course of diaphragmatic drill can run better, and are improved in general health, I can confidently vouch for the latter, but as regards the former I can only conclude that the benefit from systematic respiratory training amongst soldiers would be as great as it is among civilians who train for walking, running, &c., in a rational manner. As I have already stated, men who breathe correctly do not require instruction in respiration. The uncivilised Zulus and Soudanese that are held up to me as examples of individuals who never received methodical training in breathing, belong to this fortunate class. The majority of them are, I take it, fine specimens of humanity *because* they are excellent breathers. Certainly the Zulus I saw during the South African War carried out their respiratory duties in a more satisfactory manner than the average civilised being, for without exception they were good lower chest breathers. Their simple mode of life, freedom from tight clothing, and an erect bearing, are without doubt factors that have prevented them from becoming, like the majority of British soldiers, "Respiratory Degenerates."

I am, &c.,

Chatham,
June 10th, 1907.

R. F. E. AUSTIN,
Major, R.A.M.C.

Journal
of the
Royal Army Medical Corps.

Original Communications.

LOCAL ANALGESIA.

By ARTHUR E. BARKER, F.R.C.S.

Professor of Surgery at the University College Medical School and Surgeon to the Hospital.

THE following essay, published at the request of several friends on the teaching staff of the Royal Army Medical College, is intended to be a second edition of one which has already appeared in the *British Medical Journal* of December 24th, 1904, now out of print, and must necessarily contain much familiar to those who have read the first edition. The latter, on re-perusal, seemed to me to need expansion and some pruning in order to bring it more up to the needs of to-day, and to make it more practically useful to those who are seriously endeavouring to replace the more dangerous methods of general anæsthesia by one which has really no risks if properly used. It seemed better, therefore, to recast the matter contained in the first paper without in any way altering its principles; and it is hoped that this may have increased its value, at all events to beginners in the study of the procedure. The history of the subject was briefly sketched in the first edition and may be omitted here to save space, but I think it is worth study by all who wish to avoid the errors of earlier experiences.

ANATOMICAL.

The fundamental principle which underlies all local analgesia produced by the injection of various drugs, is based upon the dis-

covery by Corning, in America, in 1885, that certain substances applied to the branch of a nerve suspend its sensory functions over its whole distribution for a considerable time. His experiments, conducted first with *cocaine*, have since been repeated with

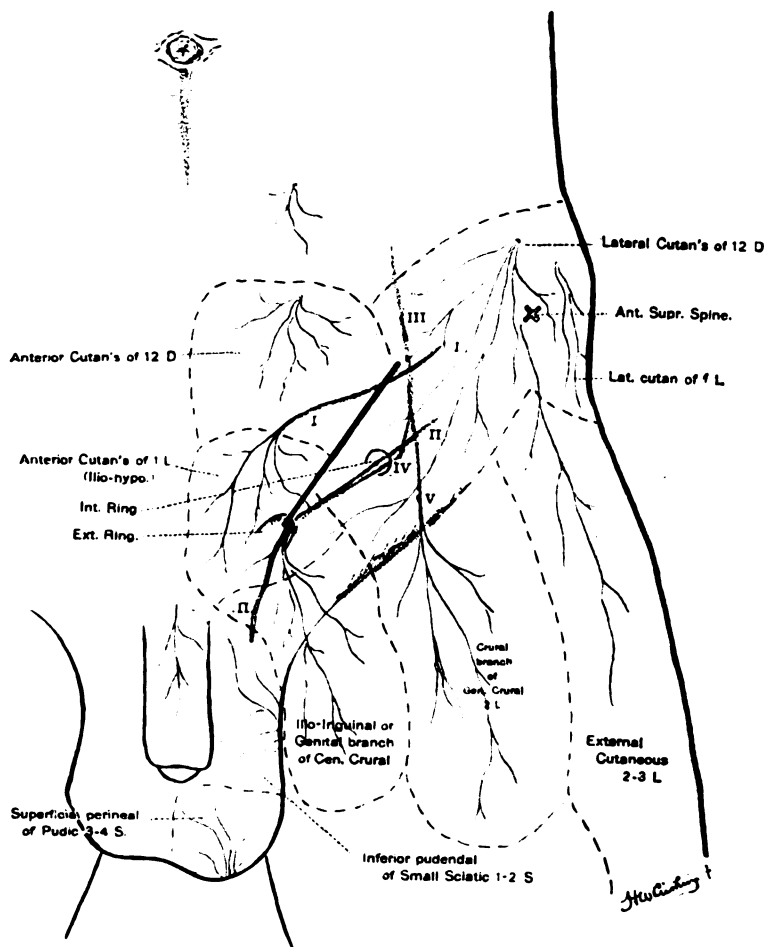


FIG. 1.—Showing inguinal scrotal nerves, their peripheral distribution, and relation of the main trunks to the hernia incision. I., Ilio-hypogastric; II., ilio-inguinal; III., genito-crural; IV., genital branch; V., crural branch. From Cushing, by kind permission.

many other bodies, among which may be mentioned tropacocaine, β -eucaine, stovaine, novocaine and alypin, and have given similar results. His conclusions have received further support from Bier's demonstration on himself and others, that these substances brought

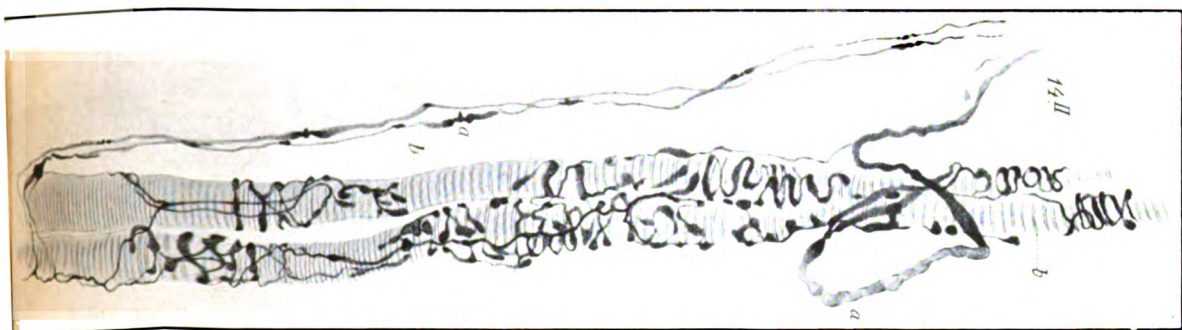


FIG. 2.—Muscle bundle from the transversalis abdominis of the rabbit showing the nerves ending in it. (a) Medullated nerve fibre which ends in the form of spirals and tree-like branchings on each single bundle (b). DOGIEL.

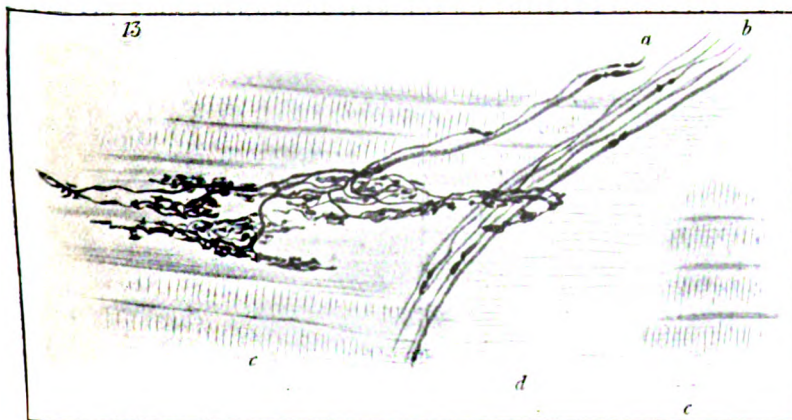


FIG. 3.—Terminal branchings of nerves from the intramuscular connective tissue of the rectus abdominus muscle near one of the inscriptiones tend. (a) Medullated nerve fibre. (b) Nerve twig. (c) Muscle fibres. (d) Inscriptio tendinea. Obj. C. Zeiss, DOGIEL.

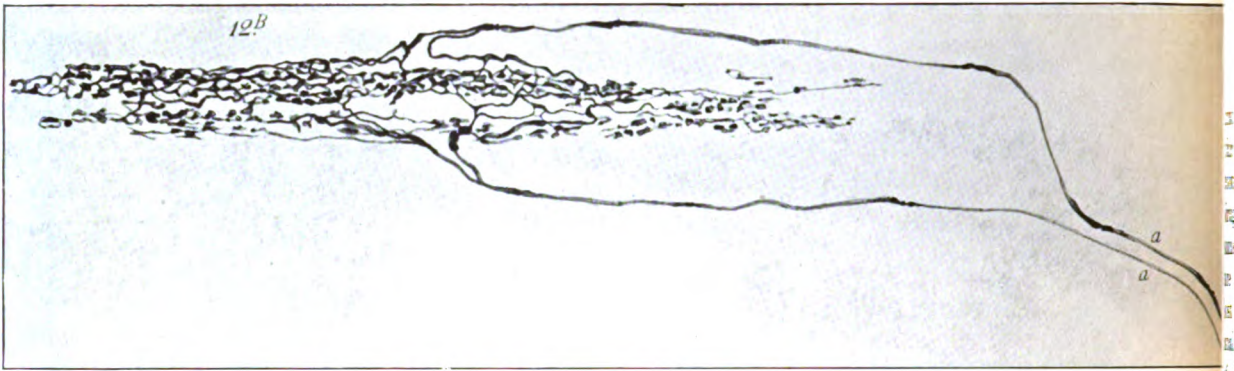


FIG. 4.—A terminal nerve-branching from the connective tissue septum between the muscle fibres of the transversalis abdominis of a rabbit close to their transition into the tendon. Two medullated nerve fibres (*a a*) take part in the formation of the terminal end organ. DOGIEL.



FIG. 5.—Terminal corpuscle from the human peritoneum. (*a*) Medullated nerve fibre. (*b*) Capsule of the terminal corpuscle. DOGIEL.

into contact with the roots of the spinal nerves, or the cord itself through the lumbar sac, suspend all sensory functions below the roots affected, or the segments of the spinal cord reached by the drugs. Local and spinal analgesia are, therefore, in principle the same, and only differ in the anatomical spot at which the drugs are applied to the nervous structures; in each case sensation is lost below the drugged nerve area. In the procedure of local analgesia, then, it is of prime importance to study the distribution of *all* the sensory nerves going to the actual field of operation and its neighbourhood; and it must never be forgotten that most parts of the body receive their nerve supply from more than one branch, and many from several having a very different origin. This is best illustrated by a familiar example.

In the operation for the radical cure of an inguinal hernia we have to consider the innervation of the *skin*, the *muscles* and their *tendinous expansions*, the *cord* and the *peritoneum*, not only of the sac itself, but also of that part of the serous membrane surrounding the neck, which is sure to be dragged upon, more or less, during its separation and ligature.

The *skin* of the inguinal region and scrotum are supplied by branches of the ilio-hypogastric, ilio-inguinal, from the first lumbar nerve; the inferior pudendal from the lesser sciatic, and the superior and inferior superficial perineal branches from the lower part of the sacral plexus. Below the fold of the groin on the inner side of the thigh is an area supplied by the genital branch of the genitocrural nerve. The cutaneous from the last dorsal also probably sends twigs as far as the rings (fig. 1).

The *muscles* forming the inguinal rings derive their innervation from the ilio-hypogastric and ilio-inguinal nerves (fig. 2), as also their aponeuroses (fig. 3) and their intermuscular areolar tissue (fig. 4).

The *parietal peritoneal* nervous supply was for a long time obscure, and some even denied that the parietal serous membrane was sensitive at all. But the labours of Lennander, Ramström, Dogiel, Timofejew and others, quite recently, leave no room for doubt that it is highly innervated. In the inguinal region it is supplied by deep branches from the ilio-inguinal and ilio-hypogastric nerves, which split up into intricate plexuses in the subserous tissue and terminate with highly complex "end organs" under the endothelial layers of the serosa (fig. 5). All surgeons of experience know well how exquisitely sensitive the parietal peritoneum really is and how severe the depression produced by any injury to it. But it is not so generally known that its visceral layer is almost, if not entirely,

insensitive to pain except where the root of the mesentery is concerned, and this is only slightly so. Indeed, it is said on good authority that all the sensory nerves running into the mesentery in its whole course if gathered into one strand would not be equal in thickness to one of the spinal sensory roots coming off from the cord. The above illustrations of the nerve-endings in the muscles, tendons, connective tissue, and peritoneum are taken from a monograph by Professor Dogiel, of St. Petersburg, "*Die Nervenendigungen im Bauchfell in den Sehnen den Muskelspindeln, &c., &c.*," *Archiv für mikroskopische Anatomie*, by permission of the author.

The *spermatic cord*, *testicle* and *scrotum* receive nerves not only from the ilio-hypogastric, ilio-inguinal, perineal, and pudendal nerves, but also from the genital branch of the genito-crural after its escape from the external ring. All these nerve supplies require notice when injecting for analgesia, as they all more or less overlap, and to leave out any one of them would mean an imperfect suspension of sensation. The same reasoning applies to varicocele.

Again, in the neck, supposing we are about to remove a thyroid tumour or a packet of glands, we have to consider not only the skin incision but also those deeper parts to which our operation will extend. It will be necessary, therefore, so to place the injection as to bring it in contact with most of the nerves of the cervical plexus at points well above the field of operation (figs. 6 and 7). This will be referred to later under the heading of technique. Some surgeons, to judge from their writings and utterances, appear to be doubtful of the possibility of rendering the deeper tissues insensitive, but they are among those who habitually employ the stronger solutions, which can only be used sparingly, whereas weaker solutions with an admixture of adrenalin can be injected widely, and reach in the various planes to the trunk and finest filaments of all the sentient nerves of the part.

But a more useful illustration than either of the above may be taken from the hand or foot. Here in operations on the fingers or toes we are able by infiltration at their bases at various depths to bring the injected fluid into contact with all the nerves supplying the members, so that these are rendered completely insensitive without any actual infiltration of the part to be operated on. In all these cases enough of the drug in a diluted condition must be injected at various depths to render the escape of any one nerve improbable.

Again, for the removal of a portion of rib for the evacuation

of an empyæma or of a liver abscess the infiltration must not only be directed to the skin and muscles but also to the nerves above and below the bone and the periosteum on both its aspects. In these cases it is the periosteum, especially if inflamed, which requires the most complete saturation at a point well above the area of operation.



FIG. 6.—Heavy curved line indicates the direction of Kocher's "collar cut" for excision of a large thyroid tumour. The cut would be correspondingly reduced for a smaller tumour.

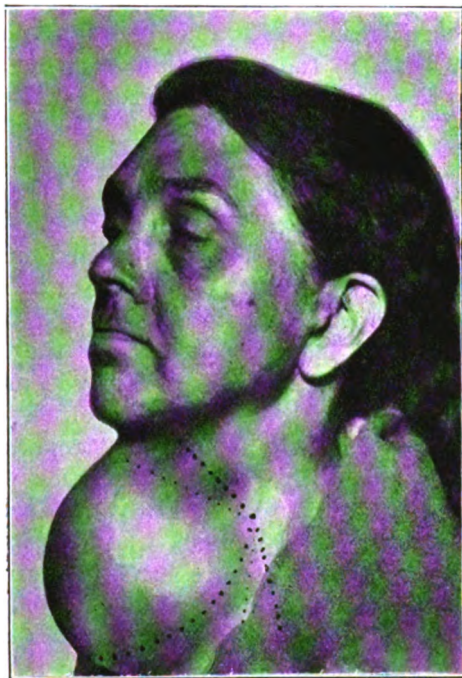


FIG. 7.—Heavy dotted curved line indicates the line of superficial injection in the skin for the "collar cut." Heavy dotted transverse lines indicate the direction of this subcutaneous infiltration for the superficial nerves. Light dotted oblique lines indicate the direction of infiltration for the capsule.

PHARMACOLOGY.

Without going into the merits of the various substances which are employed for local analgesia by infiltration, I shall deal with that one which is most familiar to me, and which has yielded results in the hands of many surgeons unsurpassed as far as I have read, seen or heard of.

β -eucaine (hydrochloride of benzoylvinyl-diaceton-alkamin) has long been known as a synthetic product allied to cocaine, but far less toxic and almost, if not quite, as efficient for producing analgesia. It is soluble in pure distilled water at ordinary temperatures in the proportion of about 4 per cent. of the drug, but is decomposed by a very small trace of alkali. It can be sterilised by boiling without change, but for this hard Bohemian glass vessels should be employed, which do not part with the alkali used in glass making. Such solutions may be stored in stoppered bottles for a time, but are better made fresh. A 2 per cent. solution of β -eucaine freezes, I find, at 0.28° , which indicates that a 4 per cent. solution (if it were possible to make one at a low temperature) ought to have the same freezing point as the blood, 0.56° , and the same osmotic tension as the latter. But like all the analgesic compounds mentioned above, β -eucaine is markedly hæmolytic and rapidly destroys blood-cells (and presumably also other tissue cells) placed in a 4 per cent. solution, just as stovaine, tropacocaine and novocaine do in their solutions, freezing at the same point as blood. This fact, apparently unknown to many, may account perhaps for the necrosis of the edges of wounds where strong solutions have been employed, which have been reported from time to time. But as I have never employed strong solutions and have always added as much NaCl as would render them isotonic as tested by freezing, I have never, in hundreds of cases, seen any deleterious tissue-changes following on injection. One surgeon wrote to me saying that he had had gangrene of the fingers following on injection in some cases operated on before he had read my paper of 1904, already referred to, and that the reason was obvious, because the solution had contained from 10 per cent. to 15 per cent. of eucaine. Probably also the heat of the water which was necessary to dissolve so much as 10 per cent. of β -eucaine operated also injuriously. In this case several factors were at work. First the solution at 10 per cent. would be very hypertonic and therefore destructive if it could be tested by freezing; secondly, it would have to be very warm to dissolve so much of the drug; thirdly, sodium chloride was not used, and from his letter I

gather that it required very forcible injection to infiltrate all he wished, there was therefore much tension of the tissues; and fourthly, there was the specific hæmolytic action of a concentrated solution of β -eucaine to be reckoned with. All this is avoided by using *very dilute* solutions of β -eucaine in normal saline and injecting them in great abundance at a wide distance round the area to be operated on, paying particular attention to the nerves supplying the part, which should be surrounded on all sides by the injected fluid. The need of stronger solutions is by these means avoided. In this way I have over and over again used close upon 200 cc. (7 oz.) of a *two per thousand* solution with the best results. These solutions should always contain, for operations lasting more than fifteen to twenty minutes, a small proportion of one of the adrenal derivatives. That which I have hitherto used has been adrenal chloride, which has the well-known property of causing contraction of the smaller vessels except those of the lungs whenever it comes in contact with them. The result of this is that there is an ischæmia all over the area infiltrated, which lasts for an hour or two, during which time the eucaine is probably taken up by the tissue-cells and its toxicity lowered or destroyed before it is parted with. The circulation in the part injected being thus enormously reduced, the β -eucaine is not washed away into the blood stream or lymphatics so rapidly as without the adrenalin, and paralyses the sensory nerves. This paralysing effect is slower if adrenalin is used than without it, so that the surgeon has to wait half an hour or thereabout before operating. Indeed, the analgesia is usually more perfect about an hour after infiltration than half an hour after. For small operations, then, which only occupy about a quarter of an hour, the surgeon can dispense with adrenalin, especially if he uses a solution of 0.5 per cent. of β -eucaine in normal saline. But in this case one cannot inject so much of the solution, which, without adrenalin, is much more toxic than with it; probably not more than 40 cc. should be thus used. This is probably due to the fact, as already hinted, that the ischæmia produced by the adrenalin holds the eucaine so long in the tissues locally that it is destroyed by the protoplasm of the tissue-cells, or if not that it passes into the general circulation so slowly as to produce no ill effect. Be this as it may, it has been proved experimentally (Braun), that a dose of so powerful a drug as cocaine, which is capable of causing rapid death in an animal, may be injected without any injury if a small amount of adrenalin be added to the solution before use.

It must be remembered that the adrenalin chloride of commerce

requires to be preserved as far as possible from light and air, exposure to which render it inert. Boiling also destroys adrenalin very soon though not at once. For these reasons it should be only added to the solution of eucaine in normal saline when the latter has been boiled for sterilisation and cooled to about blood heat. The rim of the bottle having been wiped clean and the stopper loosened, the requisite number of drops are dropped into the warm solution, the stopper is refastened and the bottle is replaced in its box at once out of the light. So used, a bottle of adrenalin chloride will last good and sterile, even in hot countries, for many months. If the contents of a bottle are seen to have become turbid or to contain a sediment, this sample should not be used as it will be inert and possibly not sterile. Of the other adrenalin derivatives I have no experience, but there appears to be a prospect of their being replaced by synthetic chemistry before long. Indeed, a synthetic compound has already been produced for which it is claimed that it is identical with adrenalin or epinephrin in its physiological properties, and that it is more stable and uniform in strength and easily sterilised. If this is so local analgesia will be rendered a much more certain and an easier procedure. I have only used it myself a few times, and have found its combination with eucaine exactly the same in action as that of adrenalin chloride with eucaine. I have also given a sample of the synthetic adnephrin to Capt. Houghton, R.A.M.C., for independent observation at Millbank, and his report confirms my own experiences. In the cases in which we employed it there was the same blanching of the skin due to ischæmia and the same result as to prolonged analgesia as where adrenalin had been employed. The original synthetic solution does not require to be guarded from the action of light as does adrenalin. But, on the other hand, when added to the eucaine solution it undergoes the same colour changes to pink as does the ordinary adrenalin solution.

The solution which I have found most serviceable for general use is as follows :—

β -eucaine	0.2 = grains 3
Sodium chloride	0.8 = „ 12
Distilled water	100 cc. = oz. 3½
= 1 pro mille adrenalin chloride	10 drops = 0.5 cc.

The adrenalin is here in the proportion of about 1 in 200,000, on the estimate of 20 drops to 1 cc., which I have found to be correct as compared with a standard measure.

The most accurate and generally reliable mode of preparing this

solution which I have been able to devise is the following:— Small hard glass flasks with a bent neck, containing up to a mark on the neck 100 cc. by weight of distilled water, are filled with the latter to the mark, and boiled over a spirit lamp for a few minutes for sterilisation. To this are added 0·2 eucaine and 0·8 of pure sodium chloride, and the boiling is continued for a few minutes longer. The drugs if *carefully* weighed, mixed and prepared in tablets are quite serviceable, but hitherto I have found the powder form accurately weighed and made up in parchment papers more reliable. Some at least of the commercial tablet forms supplied to me have been disappointing, and other surgeons have had the same to report. But those tablets prepared for me by our Pharmacologist at University College Hospital have proved entirely reliable. They were made in the special machine invented for the purpose and were perfectly accurate as to the weight of each ingredient. Many of the ready-made trade solutions, sealed up in various-shaped glass vessels and containing the two drugs as above, are stated to be sterile. Whether this is so, or not, they are often useless and sometimes dangerous. I have heard of sloughing following their use even in careful hands, and the injection of one sample, freshly opened, into my own arm, was followed by cellulitis. They are not to be trusted, and all solutions should be prepared fresh.

If in sterilising the water some of it is lost by ebullition or evaporation, enough boiling water is added to it to bring it up to the mark on the neck before the drugs are added, when it is again cautiously boiled, the amount of water being always kept to 100 cc., *i.e.*, to the mark on the neck.

The flask may then be placed in cold water until cool enough for use, *i.e.*, at blood heat. Then the adrenalin or epinephrin (synthetic) solution of 1 to 1,000 is added, to the amount of ten drops, by loosening the stopper without removing it. It is then ready for use while still at blood heat. It should not be used at a temperature much above or below this, or its injection will cause slight stinging pain. When the adrenalin has been added the latter drug will only retain its blood constricting properties for about an hour, and for this reason it should not be mixed with the eucaine solution until the moment before the injection. When once infiltrated the effects on the blood-vessels locally last as a rule about two hours, in some cases three. I have removed a recurrent nodule from a woman's breast two and a half hours after injection without the slightest pain.

Larger amounts of the eucaine solution may be prepared for use by careful sterilisation and kept in stoppered bottles. But

unless these are most jealously guarded against contamination the fluid in them should be resterilised for each operation, and then little is gained by the storage. The amount of eucaine injected *with adrenalin* at one sitting should not exceed five grains, although six grains have been used without toxic effects. Without adrenalin the maximum should be three grains in three and a half ounces of normal saline solution -- 0·8 NaCl (= 0·2 eucaine in 100 cc. water).

Novocaine may be prepared in precisely the same way in powders or tablets. My personal experience of it is limited to a few cases. The strength of the solution was 0·25 per cent. with 0·8 per cent. of sodium chloride in 100 cc. water. To this was added five drops of the synthetic epinephrin. The effect was in all respects the same as in the use of eucaine. Whether there will be any advantage in using novocaine instead of eucaine is not yet certain, but it is said to be less toxic, and stronger solutions could therefore be used or larger areas could be infiltrated if it be so. It can be boiled without losing its analgesic properties, just as eucaine and stovaine. It is stated that when the synthetic epinephrin is added to novocaine the latter is increased in power, and not only this, but novocaine seems to increase the constrictive qualities of the epinephrin. So far as the latter point is concerned my own brief experience of the synthetic epinephrin seems to show that *five* drops of it are enough for 100 cc. of the novocaine solution, instead of ten of adrenal chloride.

TECHNIQUE.

For the infiltration of the fluid described above very simple syringes and needles are required, which should both be set apart for this special procedure, *and for it alone*. They should all be sterilised by steam or boiling in water *without any alkali*, any trace of which left in them would spoil both the eucaine and adrenalin. There are also objections to sterilisation by carbolic lotion and spirit. But needles can be sterilised in spirit, which does not spoil their points or fine polish, or corrode their inner surface and so choke the finer ones. Any trace of spirit in them is washed out with the first few drops of the injection, expelled with air bubbles before use. After use the needles should be washed free of the solution, which, as it contains common salt, rusts them otherwise. After this it is well to wash or keep them in spirit to remove the moisture from without and within.

The syringe which I have found most convenient is of glass

and metal (fig. 8), and if placed in tepid water and brought gradually to the boiling point rarely cracks. The piston is of a vulcanite compound which shrinks on drying and requires boiling to restore it, but otherwise it is serviceable. I have also found Braun's syringe with asbestos piston very good. Major Porter, D.S.O., R.A.M.C., who has had a large experience in local analgesia, has expressed himself not quite satisfied with these glass syringes, as liable to crack when boiled, and states that he finds an all-metal instrument more suitable. In some respects this certainly ought to be so, but an all-metal syringe used with saline fluids would be likely in time to be corroded inside, both as to piston and cylinder, and unless very carefully cleaned and put up with both these parts separate, would, I think, often be found to jam unless lubricated, which would hardly be admissible in this case. On the whole probably well annealed glass will prove the best, and the

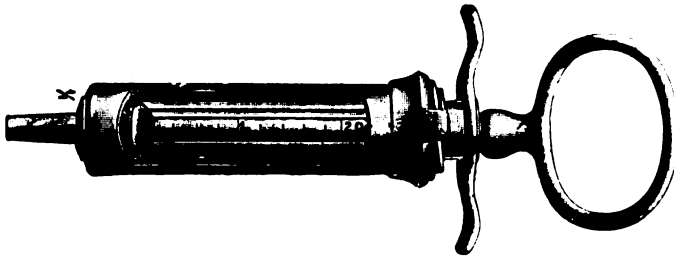


FIG. 8.

syringes mentioned above are usually supplied with spare glass cylinders. The "Record Syringe," too, with glass cylinder and metal piston, is a beautifully made and accurate instrument, which may be used for infiltrating, and if treated with care in boiling may last a long time. The best size for a syringe for local analgesia is 10 cc. A larger one which I have used requires so much force as to tire the hand of the operator, and in tough tissues is almost impossible to use.

The finer needles are of the patent Freienstein (fig. 9) pattern and are very easily obtained. They are fixed in a curved holder and cap (fig. 10). But for the deeper parts where the areolar planes or muscles (of the abdominal wall for instance) have to be penetrated, a long blunt needle which will not enter an artery or vein or injure a nerve must be used (fig. 11). Such a needle, five inches long, has been made for me, and is supplied with the first syringe alluded to

above. Its end is closed and rounded and it has a lateral eye. It can be fixed at any length in its straight receiving tube (fig. 12), which fits on to the syringe. The cap which I devised has internally a rubber washer which, when screwed upon the inner tube, fixes it water-tight by pressure on the rubber (fig. 12). After use it must be removed from the rubber, cleansed, and put away dry with its silver-

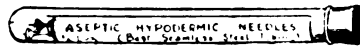


FIG. 9.—Freienstein's needles.

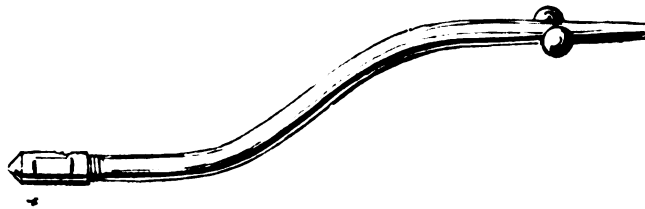


FIG. 10.—Curved receiving tube.

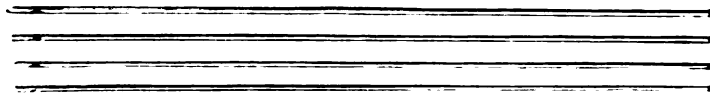


FIG. 11.—Author's straight, long, blunt needles.



FIG. 12.—Straight receiving tube.



FIG. 13.—Key for screwing cap on receiving tubes.

wire stylet. The rubber will act on the metal if this is not done. The washer may be made of a $\frac{1}{8}$ -inch section of a soft Jacques catheter. As this needle is quite blunt, a puncture in the skin must be made for it to give it admission to the deeper tissues, through which it will pass quite easily. The puncture is best made with a straight Hagedorn's suture needle after the skin has been injected. In using it beneath

the cutaneous structures it is pushed obliquely across the course of the nerves supplying the area of operation, or transversely to them (fig. 7), while the injection fluid is forced out slowly and steadily. The track of the needle should in the first case cross the nerves on the cephalic side of the field of operation, and should go through successively deeper layers with each thrust. But it is better besides to aim at infiltrating the whole area involved in the dissection of the deeper parts, so that no nerve shall be likely to escape, for it is next to impossible to infiltrate each nerve separately. Thus in the operation for the removal of the appendix, besides the infiltration of the skin, muscles, and anterior parietal peritoneum, the needle should be thrust along the crest of the ileum behind the cæum, and 10 to 20 cc. of the fluid be distributed there. The actual injection is done as follows. The syringe is filled from the bent end of the flask, which is half inverted, so that the curved part is always full. Then the needle-holder is fixed on it, turned upwards, and all air expelled. A beginning is made on the skin by thrusting the fine needle fixed on the nozzle of the syringe into the superficial part of the true cutis over one end of the proposed incision. The fluid is then forced slowly out until a white wheal about the size of a shilling is formed. Into the distal side of this patch the needle is again thrust in the same direction, and another wheal is formed, and so on, until the whole line of incision, with something to spare at each end, is converted into a white raised ridge. After the first puncture no pain should be felt, as each successive entry of the needle passes through an area already insensitive from *distension* before the action of the drug has commenced. This *distension* analgesia merges gradually into that caused by the drug. All subsequent punctures can be made through some part of the anæsthetic strip. Then in an operation of any magnitude it is necessary to use the long blunt needle, which is entered through a puncture made with the Hagedorn's needle at the cephalic end of the wheal. Through this the blunt end is entered, and the long needle is pushed still further in a proximal direction, the injection being forced out as it traverses the subcutaneous tissues. It is then withdrawn, but not completely, and pushed obliquely across the track of the nerves leading down one side of the line of incision, and then again on the other. When the syringe is emptied thus, it should be detached from the needle-holder without withdrawing the needle from the tissues, re-filled and re-attached, and so on, until all the infiltration that can be done from one puncture is completed. If necessary, then a new puncture may be

made for the deeper infiltration, but as the needle can be drawn out and fixed to five inches this is not often wanted, as most of the field of operation can be reached with it by passing it in different directions from the first puncture.

The only thing now remaining is to cover the area of operation with a sterile covering and wait for half an hour or so, when the analgesia ought to be complete. There is another advantage besides in waiting. The injection of a considerable volume of fluid subcutaneously causes a mechanical œdema for a time until it is absorbed gradually. This œdema may embarrass the young operator, and more or less mask the anatomical details. At the end of half an hour it has mostly disappeared, and in an hour is hardly noticeable, and the surgeon cuts into blanched structures in which every detail can be seen, the more so as there is hardly any bleeding. It is sometimes supposed that reactionary bleeding is common after the use of adrenalin, but this is not my experience. I believe that where it has been seen it has been due to the fact that too much adrenalin was used, which has contracted some vessels for the time which ought to have been closed by forcipressure, torsion or ligature. Where the dilution has been at or about 1 in 200,000 I have not seen it more frequently than under general anæsthesia, the larger vessels having been noticed and secured before closure of the wound.

THE PREPARATION OF THE PATIENT.

Besides the most careful cleansing of the whole field of operation and its surroundings beforehand, as far as the patient's skin is concerned, other matters contribute much to the success of an operation under local analgesia. First, patients should not be in an absolutely fasting condition. They are better able to overcome the natural nervousness of facing an operation if strengthened by some light food, such as an egg and milk, or coffee, or alcoholic stimulant, half an hour before. Again, with somewhat nervous people, a hypodermic injection of morphia is very desirable just before the patient leaves the ward for the operating room. But the method should give way to general anæsthesia in the case of very excitable or nervous people, as also where children are concerned. Then it is well not to say too much to a patient about the infiltration or the operation. I generally tell them merely that we are going to squirt something into the skin so that they shall not feel. This is done with as little comment as possible, and a sterile wrap

is put over the part to await operation. Just before the latter, the skin may be lightly wiped with a spirit compress, but *not* scrubbed or treated in any way with fresh antiseptics, which would produce hyperæmia. We have to bear in mind that the ischæmia produced by the adrenalin compound is half the battle in local analgesia, and that we are dependent on it to a certain extent for the duration of the insensibility to pain. To destroy this ischæmia by friction or irritant antiseptics would defeat the object we have in view. Again, while operating there should be some screen or other device between the patient's eyes and the surgeon, which shall prevent his observing what is going on. This does not prevent the surgeon or his staff from exchanging an occasional friendly word with the patient on indifferent things, which may direct his attention from the matter in hand. Or he may be given a cup of tea or coffee or be encouraged to smoke a little under circumstances. This latter might be considered a little too unconventional in a metropolitan hospital, but one can imagine it as permissible elsewhere or on a campaign, and I have certainly encouraged it among my private cases, and with every advantage to patient and operator.

Another matter worth emphasising is that in operating the surgeon should avoid all dragging on the tissues as far as possible. It is perfectly obvious that a part may, after infiltration, be quite insensible to cutting or forceps, but that the parts around may be painful if dragged upon. The operator will, therefore, to obtain the best results from local analgesia, be obliged to cultivate a deliberate and delicate manipulation in such cases. And it is a comfortable reflection that the tissues will not suffer from this absence of violence, but be the more preserved in all their vitality.

After operations done in the above manner with eucaine and adrenalin, it is not necessary to keep patients in a recumbent position as was the case with *cocaine*. Many of my patients have walked away after operation.

This paper is not intended to suggest doubts as to the benefits we all derive wholesale from the use of general anæsthesia. But we need no reminder that the latter has its drawbacks and risks, and from what I hear almost daily this method appears certain to play a most useful rôle, more particularly in the country and in the colonies, where skilful and experienced anæsthetists are not always at hand. In military surgery it has always appeared to me destined to be of the greatest importance. It has none of the risks of chloroform, and can be learned by any surgeon with a fair knowledge of anatomy. The drugs and small paraphernalia

are very portable and stable; the patients are able to help themselves immediately after, or even during, the operation, and require none of that careful watching which is necessary during the recovery from chloroform, and in this way there is a great economy of hospital service. Moreover, there is an economy of hands in another way, for if there are several ordinary operations to be done one after another, the surgeon or an assistant can inject them all one after another, and then engage in the operations himself, taking each case in turn, knowing that the analgesia will, if properly done, last for from two to three hours.

Officers in the Medical Service know best what classes of cases they are likely to be called upon to deal with. But I can imagine many likely to be met with by them which are peculiarly suited for this method; and in the future I look for a wide application both of local and spinal analgesia in military and naval practice. My own desire has been from the commencement to render both these methods simple, safe and sure by careful observation, and by anatomical and physical study, so as to bring them well within the reach of that thoughtful branch of our profession for whom this paper has been written. It requires patience and experience to master the details of both methods, but it is already certain that these are not thrown away; and I am convinced from what has been achieved in the few years that both these methods have been employed, that far better and more widely useful results may be awaited from them in the future.

My own list of operations under local analgesia is too large to be given here. It includes two amputations through the knee joint and some on smaller members, a large number of operations for hernia, inguinal and femoral, both strangulated and radical cures. Smaller operations for tumours, malignant and non-malignant, are also largely represented, as also the ligature and excision of varicose veins, both in the legs and scrotum. There can be no doubt that local analgesia has a wide application. It has already been largely employed in the military hospitals at Millbank, Woolwich, Colchester, and other places during the last three years, with the best results.

TYPHOID AND PARATYPHOID FEVERS.

BY LIEUTENANT-COLONEL C. BIRT.

Royal Army Medical Corps.

THERE appears to be some tendency at the present day to assume that any doubtful febrile case which does not conform with the text-book description of enteric fever is an instance of the paratyphoid infection. We are first concerned in finding what grounds there are for this assumption, and we ask, Is it possible from clinical symptoms alone to discriminate between typhoid and paratyphoid fevers? Conradi,¹ who has studied fifty cases of paratyphoid fever, Chevrel² twenty-eight, Coleman³ twenty-three, answer, no! A survey of recent work on this subject will substantiate this negative conclusion.

A clear conception of the action of the *Bacillus typhosus* on the human body is essential for the discussion of the question. Our ideas have been much enlarged by the results of modern technique employed in the precise diagnosis of fevers, that is, by obtaining cultures of the invading microbe from the blood, or its isolation from dejecta, and by the quantitative estimation of the agglutinative power of the blood of the patient on these growths and on those of known origin.

It has been proved that the presence of Eberth's bacillus in the human organism may have very varying effects of every degree of severity. It may be a parasite long harmless to its host, or it may be the cause of a fatal malady. Beginning at the bottom of the scale we find that the enteric bacillus may be an inhabitant of the bile channels and intestinal canal of people who have been in perfect health for an indefinite period. Remlinger and Sneider⁴ were the first to discover the micro-organism in the alvine contents of healthy people. German observers have devoted much attention to these "bacillenträger" or "typhoid carriers," as they are rightly called. Thus Lentz⁵ has met with twenty-seven "typhoid carriers" and five "paratyphoid." Minelli⁶ last year published

¹ Conradi, *Beilage Cent. f. Bakt. Ref.*, September 15th, 1906.

² Chevrel, *Thèse de Paris*, 210, 1906.

³ Coleman, *Med. News*, New York, July 29th, 1906.

⁴ Remlinger and Sneider, *Annales de l'Inst. Pasteur*, January, 1897.

⁵ Lentz, *Klin. Jahrb.*, xiv., p. 87.

⁶ Minelli, *Cent. f. Bakt. Orig.*, xli., 4, p. 406, June 14th, 1906.

a comprehensive paper on the subject. The importance of recognising such persons liable to endanger the community at large is shown by an example reported by Levy and Kayser.¹ A woman, an inmate of a public institution, suffered from enteric fever three years previously. After this, sporadic cases occurred in the ward where she resided. Examinations of her fæces disclosed the presence of the enteric bacillus. Ultimately she herself succumbed to a second attack. The *B. typhosus* was obtained from her liver and spleen. They were very numerous in the bile and were found also in the interior of some gall-stones. Where Eberth's bacillus has been discovered in the dejecta of robust persons, the individuals concerned have mostly been in association with, or were liable to the same influences as, typhoid patients. Minelli, however, detected a "typhoid carrier" amongst 250 inmates of a prison where no enteric had occurred. It would not be rash, therefore, to conclude that there must be many soldiers who are harbouring the typhoid bacillus in every army which takes the field. This affords an explanation of outbreaks of enteric fever under circumstances which would otherwise compel us to believe it arose *de novo*. Moreover, these "typhoid carriers" live with the sword of Damocles hanging over them. If for any reason the defensive processes in their bodies be lessened, the bacillus, instead of being an innocent parasite, becomes an invading foe. It seems probable that the typhoid epidemics which so often arise immediately after the arrival of troops at a hill station in India are thus caused. The immunity of men who are fostering the bacillus in their bile channels and alimentary canals is lowered by the fatigue of the ascent. The microbe thereby gains a mastery signified by an attack of enteric fever. This is not an isolated incident in human pathology. Fraenkel's pneumococcus is an almost constant inhabitant of the normal mouth. The diphtheria bacillus may exist in the nasal passages and throats of persons in health. Cholera vibrios may be discharged in the evacuations of healthy people who have been in contact with cholera patients. The labours also of the Mediterranean Fever Commission have brought to light the fact that the *Micrococcus melitensis* may live in the bodies of men and animals for months or years without producing signs of illness.

Ascending the scale in the order of severity of the typhoid infection, cases of apyretic enteric have been recorded. An instance

¹ Levy and Kayser, *Münch. Med. Woch.*, No. 50, 1906.

came under my own observation during the South African War. A typhoid-like tongue, diarrhoea, enlarged spleen, and typhoid spots were noted in a man who had no fever. West¹ has reported a case of successful operation for perforating typhoid ulcer in a patient who had had no pyrexia or markedly impaired health until the rupture occurred. In 44 per cent. of 186 *post-mortem* examinations I have made on those who have succumbed to enteric fever, the lesions were found to be of much longer duration than the assigned period of illness. This would indicate that the invasion of the bacillus during the early stages was devoid of symptoms.

A little higher still on the scale we meet with cases of fever lasting one or two days. This class was well known to all those who had charge of fever cases in South Africa. The temperature would drop suddenly and in many convalescence would ensue, but in others, after an interval of some days apyrexia, the temperature would rise and pursue a typical enteric course.

Again, in those whose immunity is lower, though still great, the infection is marked by a few days' fever often ending in complete recovery, yet in others relapses will occur. I have in my possession fifty-nine charts of such short and mild febrile attacks, followed by relapses usually of greater severity than the primary illness. The diagnosis of these apparently insignificant febriculas may be confirmed in a more tragic manner by perforation taking place without warning. Velich² states that such cases cause 2 per cent. of the sudden deaths occurring in France. Forman and Selby³ in the JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, January, 1905, record an eight day fever followed by a fatal relapse.

These mild cases figure largely in returns as "simple continued fever." I found⁴ that they were relatively more numerous amongst the inoculated than the uninoculated. The mortality of 947 cases of enteric fever amongst the uninoculated was 14·25 per cent., while that of 263 cases amongst the inoculated was 6·8 per cent. The average duration of pyrexia in the former class was twenty-eight days and in the latter fifteen days. Relapses were four times more frequent in the uninoculated.

The true nature of these abortive fevers has long been known to Army medical officers. In the notes for the guidance of officers

¹ West, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, December, 1904, p. 655.

² Velich, *Arch. f. Hyg.*, xlix., 2, p. 113.

³ Forman and Selby, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, vol. iv., p. 77.

⁴ *Brit. Med. Journ.*, 1902, i., p. 75.

joining the Suakim Expeditionary Force, issued by the Medical Department, War Office, February 14th, 1885, the following occurs: "The events making up the medical history of an army in the field develop themselves with a regularity which is almost monotonous. Looseness of the bowels, under the name of camp diarrhœa, begins to come on almost as soon as the army takes the field. This is in a large number of cases compatible with good health. Soon cases of fever appear, some of very brief duration, which are classified as 'heat fever,' and some are attended with diarrhœa, marking the commencement of enteric fever. The disease embraces every variety from the mildest to the severest types, from the so-called ambulant to the most fatal forms. The disease occasionally runs so mild a course as to resemble febrile dyspepsia, and then the fever fails to be recognised at all or fails to be rightly designated. One thing is certain. The tabulated number of admissions falls very short of the number of cases that have really suffered from enteric fever. The high rate of mortality is mainly attributable to the fact that only the severe and more pronounced forms are diagnosed and returned as enteric fever. It must be borne in mind that this fever does not invariably conform to the temperature ranges which have been far too arbitrarily laid down by medical authors." Those who took part in that expedition know that this forecast was accurate to the letter. The prevalence of gastric derangements premonitory to an epidemic of typhoid has been noted in the Worthing, Maidstone and Lincoln epidemics. The statistics of the Spanish-American War are most illuminating: 15·3 per cent. of the troops who had not suffered from diarrhœa developed enteric fever, while only 6·8 per cent. of those who had had previous attacks of diarrhœa contracted enteric. Hence it must be inferred that a large proportion of such cases of looseness of the bowels was in reality enteric fever, which conferred on the subjects immunity against further attacks.

Still further proof from the epidemiological side that "simple continued fever" is enteric fever, is afforded by the masterly analysis of the statistics of the fevers of Pietermaritzburg by Lieutenant-Colonel R. J. Simpson, C.M.G., R.A.M.C.¹ He showed that there is a strong positive correlation between simple continued and enteric fever. The curves of their respective seasonal prevalence closely correspond, implying a common factor in their causation. Major

¹ Simpson, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, October, 1905, v., p. 503.

J. W. Cockerill¹ has arrived at a similar conclusion from a careful study of the epidemiology of the continued fevers of Bermuda.

Finally, that such short febrile attacks are due to the enteric bacillus has been demonstrated by the cultivation of that microbe from the blood. Biffi and Galli² obtained Eberth's bacillus from the blood of twenty-seven out of thirty cases of mild pyrexia examined. Perquis³ similarly has grown the microbe from the blood of those subject to only transitory fever. It must here be noted that the blood of "typhoid carriers" does not contain the bacillus.

At the top of the scale of severity of typhoid infection we have cases which present the picture of the disease as it is usually painted in text-books, concerning which there is no doubt clinically. Treupel⁴ observed a typical temperature curve in only 46 per cent. of his 60 cases.

We hope to have made plain the protean characters which infection with the enteric bacillus may assume. We now proceed to compare these with the syndrome presented by the invasion of the paratyphoid bacillus.

Paratyphoid fever is not a well-defined entity. It is impossible to find a diagnostic point by which it may be separated from enteric. Most of the published cases are described as resembling typhoid fever. The lassitude, head- and backache, ill-defined gastrointestinal symptoms at the outset, in no way differ from enteric. It may commence suddenly, but in about 10 per cent. of enteric attacks the symptoms begin abruptly. In four or five days the clinical picture is completed in the typhoid state and posture, flushed cheeks, perhaps herpes on the lips, typhoid spots, pain and gurgling in the right iliac fossa, enlarged liver and spleen, slight bronchitis, diarrhoea or constipation, pulse dicrotic and slow, epistaxis. The temperature is rarely higher than 104° F., and remains raised for ten or fifteen days in the severer cases. Defervescence takes place by lysis. Shorter attacks have also been recorded with sudden onset, vomiting, diarrhoea and pyrexia, and thus resemble food poisoning. In these cases also typhoid spots have been seen. The complications are seldom serious. Intestinal hæmorrhage is rare, perforation has not been reported. Pleural effusion, phlebitis,

¹ Cockerill, *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, June, 1905, iv., p. 796.

² Biffi and Galli, *Cent. f. Bakt. Ref.*, June 6th, 1904, xxxiv., p. 778.

³ Perquis, *Thèse de Paris*, No. 237, 1903-1904.

⁴ Treupel, *Münch. Med. Woch.*, vol. lii., No. 39.

meningitis, and neuritis may occur. Suppurations beneath the periosteum in the gall-bladder and testis have been noted. The urine is slightly albuminous in one-third cases. The changes in the formed elements of the blood are similar to those which take place in enteric fever, that is to say, leucopenia with a mononuclear increase in the earlier period, followed by an eosinophilia in the later, is observed. The incubation period, according to Prieffer¹ and Sacquepée, is usually fifteen days. It may sometimes be curtailed to five or six days.

Cases of paratyphoid fever have been reported in the United Kingdom, France, Germany, Italy, Roumania, United States, Brazil, India, Ceylon, China, Japan, Philippines, Tunis, and Senegal. Two instances in South Africa came under my own observation. The disease is chiefly prevalent during the enteric season. Boycott² met with three cases of paratyphoid fever and 176 of enteric. Foreign observers put the ratio higher. Wells states that 10 per cent. of typhoid-like fevers in Chicago are paratyphoid. Kolle³ estimates the proportion at the same figure. I myself have isolated the paratyphoid bacillus in two and the enteric in forty-six cases.

About 500 accounts of paratyphoid infection are to be found in medical literature.⁴ The mortality of these was about 2 per cent. *Post-mortem* appearances have been recorded in fifteen. In many of these necropsies the evidence of paratyphoid infection was not convincing. In Strong's⁵ case typhoid lesions were found in the intestine. The agglutinative power of the serum on the paratyphoid culture isolated was not tested. Berg and Libman⁶ observed typhoid ulceration of the bowel in their case. The action of blood was five times as great on the typhoid bacillus as on the growth isolated. Ascoli's⁷ description of the *post-mortem* appearances and of the micro-organism obtained in his instance are consistent with enteric fever. Schmidt's⁸ patient succumbed to pyæmia consequent on suppuration of the gall-bladder. He isolated a microbe like the typhoid bacillus, but considered it was a para-

¹ Prieffer, *Zeit. f. Hyg. u. Inf.*, February 18th, 1904, xlv., p. 23.

² Boycott, *Journal of Hygiene*, January, 1906, vol. vi., No. 1., pp. 33-73.

³ Kolle, *Zeit. f. Hyg. u. Inf.*, lii., p. 28, 1906.

⁴ Vallet, *Bull. Med. Paris*, t. xix., p. 33, 1905; and Jurgens, *Zeit. f. Klin. Med.*, xxv., Nos. 1 and 2.

⁵ Strong, *Bull. Johns Hopkins Hosp.*, 1902.

⁶ Berg and Libman, *Jour. Amer. Med. Assoc.*, 1902.

⁷ Ascoli, *Cent. f. Bakt. Ref.*, September 19th, 1904.

⁸ Schmidt, *Jour. Amer. Med. Ass.*, Chicago, 1903, xli., p. 1470.

typhoid, since strong typhoid serum did not clump it. Sacquepée¹ has grown, however, such non-clumping strains of Eberth's bacillus from a typhoid spleen. Bancel² has met with similar cultures from three typhoid abscesses. Nicolle and Trenel³ and Batty Shaw⁴ have had a like experience. Tuttle⁵ also concluded that he was dealing with a paratyphoid bacillus because the culture failed to agglutinate with typhoid serum. Typhoid ulcers were found in the ileum. In the bowel of Jochman's⁶ patient there were no changes to be seen, but death was caused by scarlet fever. The paratyphoid bacillus was obtained only on the day preceding. Wells and Scott⁷ observed in their patient, who succumbed on the thirty-third day, several superficial confluent ulcers with greyish basis in the last two feet of the ileum, more closely resembling dysentery than enteric. The lymphatics were not infiltrated nor were the mesenteric glands swollen. The ulceration was limited to the ascending colon in Luksch's⁸ necropsy. Le Count and Kirby⁹ observed only slight swelling of Peyer's patches in an infant of four months, whom they thought died of a paratyphoid A infection, but as their microbe failed to ferment mannite, levulose and maltose, it differed from it. Sion and Negel¹⁰ have found congestion of the mucous membrane of the ileum and colon, but neither the follicles nor mesenteric glands were enlarged. Brion¹¹ noted typhoid lesions in his case, Firth¹² in his, Guerbet and Henry¹³ in theirs, Castellani in his also. In the South African instance described below enteric ulcers were present.

It is therefore clear that there are no definite *post-mortem* appearances by which paratyphoid fever can be recognised. Many examples of enteric fever have been recorded in which no changes have been discovered in the intestinal canal. With only a passing

¹ Sacquepée, *C. R. Soc. Biol.*, November 25th, 1905, lix., p. 536.

² Bancel, *Proc. N. Y. Path. Soc.*, February, 1905, v. i.

³ Nicolle and Trenel, *C. R. Soc. Biol.*, 1900, lii., p. 1088.

⁴ Batty Shaw, *Brit. Med. Jour.*, i., 1899, p. 1289.

⁵ Tuttle, *Proc. New York Path. Soc.*, December, 1903.

⁶ Jochman, *Cent. f. Bakt. Ref.*, February 27th, 1903.

⁷ Wells and Scott, *Journ. of Infectious Diseases*, i., p. 72, 1904.

⁸ Luksch, *Cent. f. Bakt. Orig.*, 1903, xxxiv., p. 113.

⁹ Le Count and Kirby, *Trans. Chicago Path. Soc.*, 1904, vi., p. 209.

¹⁰ Sion and Negel, *Cent. f. Bakt. Orig.*, October 8th, 1902, xxxii., p. 482.

¹¹ Brion, *Cent. f. Bakt. Ref.*, January 5th, 1906, xxxvii., pp. 18-20.

¹² Firth, *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, March, 1904, ii., p. 242.

¹³ Guerbet and Henry, *C. R. Soc. Biol.*, November 18th, 1905.

reference to Chiari and Kraus,¹ monograph on typhoid fever without ulceration, published before modern technique for the identification of the *B. typhosus* had been introduced, Weichardts, Guizetti,² Michelazzi,³ and Chevrel,⁴ have all recorded cases in which the typhoid bacillus has been isolated from the blood, though no vestige of bowel ulceration was discovered at the *post-mortem* examination.

For the clinical observer, therefore, there is only one fever—enteric, and it is left to the bacteriologist to determine the actual infecting agent. Cockerill in his study of the prevalence of continued fevers in Bermuda takes up this point of view on epidemiological grounds.

The possibility of obtaining an exact diagnosis hinges on the fact that the fevers under discussion are bacteriæmias and not merely local infections of the intestinal tract. Consequently, if blood be withdrawn under conditions which preclude contamination and introduced into nutrient media, the bacillary growths obtained are the infecting agents, since blood in health is sterile even in “typhoid” and “paratyphoid carriers.” Positive results are unequivocal. But fresh human blood exerts a lethal action on typhoid and paratyphoid bacilli. This bactericidal power is enormously increased in these fevers. On the authority of Korte and Sternberg⁵ it may sometimes be evident if the blood be diluted 4,000,000 times. Therefore it is necessary that the ratio of the medium to the blood inoculated should be large, or that the germicidal constituent be inhibited by means of bile—Conradi’s⁶ method. In practice it is usual to draw 5 to 10 cc. of blood from the median basilic vein and distribute in four or five flasks each containing 300 cc. of broth. One of the latest contributions on blood culture with the aid of bile is Kayser’s⁷. He recommends that 2.5 cc. of blood should be mixed with 5 cc. of sterile ox bile. After fourteen to twenty hours incubation at 37° C. he plates on Endo’s or Drigalski-Conradi’s agar. He thus isolated Eberth’s bacillus from 117 typhoid patients and paratyphoid bacilli from seven. In common with other observers he found that the earlier in the course of

¹ Chiari and Kraus, *Zeit. f. Heilkunde*, 1897.

² Guizetti, *Policlin. Roma*, 1901, viii.

³ Michelazzi, *Thèse de Paris*, No. 237, 1903-4.

⁴ Chevrel, *Bull. Soc. méd. des hôp. de Paris*, December 1st, 1905, p. 897.

⁵ Korte and Sternberg, *Deut. Archiv. f. Klin. Med.*, pp. lxxxii., pp. 296 and 321.

⁶ Conradi, *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, July, 1906, p. 87.

⁷ Kayser, *Cent. f. Bakt. Orig.*, September 1st, 1906, xlii., p. 185.

the illness he made the examination the greater success he attained. He recovered the typhoid bacillus from all the enterics in the first week, and the paratyphoid from 80 per cent. of the early paratyphoid fevers. He remarks that the latter micro-organism disappear from the blood more quickly than the former. If he made use of a small quantity of blood, such as might be drawn from the finger-tip, his failures were increased. The literature of blood-culture in typhoid fever is now extensive. I have collected the results of thirty-seven investigators. Eberth's bacillus was isolated from the blood of 1,150 cases out of 1,303 examined, that is in 88·4 per cent. The number of times paratyphoid bacilli have been recovered from the blood is not very large. Chevrel records twenty positive results, Kayser seven, Conradi six, Korte two, Coleman and Buxton, Brion, Gwyn, Allen, Castellani,¹ each one.

Paratyphoid bacilli belong to the typhocoli group of bacteria. They occur as short motile rods with rounded ends, 3 to 4 μ long, and 0·6 μ wide. In broth cultures their length may be much increased. They possess two to six flagella and are non spore bearing. They do not retain the stain with Gram. Bipolar colouration is frequent. It is usual to subdivide paratyphoid bacilli into A and B varieties, though this division is somewhat arbitrary and does not embrace all the strains hitherto described.

PARATYPHOID A.		PARATYPHOID B.
	<i>Broth.</i>	
Like typhoid.		Freer multiplication, with pellicle formation at times.
No indol in four days.		No indol in four days.
Proteinochrom reaction in 2 days.		Proteinochrom reaction in 2 days.
	<i>Gelatine slope.</i>	
Colonies somewhat thin and translucent, less furrowed than typhoid.		Thick, opaque, white abundant growth.
No liquefaction.		No liquefaction.
	<i>Agar slope.</i>	
Like typhoid.		Like <i>B. coli</i> .
	<i>Potato.</i>	
Like typhoid.		Like <i>B. coli</i> .
	<i>Milk.</i>	
Unchanged.		Unchanged first ten days, then thinning and brownish colouration.
	<i>Litmus milk.</i>	
Slight permanent acidity.		Early faint acidity, followed by permanent alkalinity.
	<i>Lactose media.</i>	
No gas, slight acidity.		No gas, slight acidity.

¹ Castellani, *Lancet*, February 2nd, 1907, p. 284.

Typhoid and Paratyphoid Fevers

PARATYPHOID A.		PARATYPHOID B.
	<i>Glucose media.</i>	
Acid and gas.	|	Acid and gas.
	<i>Mannite, Dulcitol, Glycerine.</i>	
Acid.	|	Acid.
	<i>Levulose, Maltose, Galactose.</i>	
Acid and gas.	|	Acid and gas.
	<i>Saccharose and Raffinose.</i>	
Unaffected.	|	Unaffected.
	<i>Glucose neutral-red media.</i>	
Become fluorescent.	|	Become fluorescent.
	<i>Drigalski-Conradi's agar, or Firth's litmus-lactose-agar.</i>	
Blue, like typhoid.	|	Blue, like typhoid.
	<i>Endo's agar.</i>	
Colourless colonies like typhoid.	|	Colourless colonies like typhoid.
	<i>Proskauer and Capaldi No. 1.</i>	
Slow production of acidity.	|	Early acidity.
	<i>Proskauer and Capaldi No. 2.</i>	
Marked acidity, followed by alkalinity.	|	Faint acidity, soon becoming alkaline.
	<i>Malachite green agar.</i>	
As dewdrops, like typhoid, destroying colour and forming clear zone.	|	More vigorous than A.

There are several dyes sold under the name of malachite green, some of which are useless for the purpose. Loeffler,¹ who introduced the method, employs tetramethyl-diamidophenylcarbinol zinc chloride double salt in the proportion of 0·006 to 0·007 per cent. With this the growth of the *B. coli communis* is inhibited.

Vaccinated media.—Paratyphoid A does not grow on agar which has served as a medium for paratyphoid A, paratyphoid B, *B. coli communis* or *B. typhosus*.

Paratyphoid B thrives on agar from which growths of paratyphoid A and *B. typhosus* have been removed, feebly on *B. coli* media, and very scantily or not at all on agar slopes from which cultures of paratyphoid B have been washed away.

Virulence.—The paratyphoid bacilli are very virulent. Feeding animals with paratyphoid B usually causes death. Their pathogenic action on man is sometimes highly marked. The number of meat-poisoning epidemics which have had their origin in paratyphoid B infections is large. Keyscher² records an extensive outbreak in Berlin caused by meat infected with paratyphoid B, and refers to similar epidemics previously reported. Fromme³ and Heller⁴ have published similar infections this year.

¹ Loeffler, *Beitrag. Cent. f. Bakt. Ref.*, September 15th, 1906.

² Keyscher, *Zeit. f. Hyg. u. Inf.*, January, 1907, lv., p. 332.

³ Fromme, *Cent. f. Bakt. Orig.*, April 25th, 1907, xliii., p. 775.

⁴ Heller, *Cent. f. Bakt. Orig.*, January 17th, 1907, xliii., p. 146.

Vaccination.—It is possible to protect animals against several lethal doses of paratyphoid A and B by injection of killed cultures. Their resistance against *B. typhosus* is also thereby increased. The serum possesses bactericidal, agglutinative and immune bodies. The latter are fixed by the specific bacillus. Thus paratyphoid B bacillus fixes the paratyphoid B immune body, the paratyphoid A the A immune body. Neither are fixed by Eberth's bacillus, except to a limited extent. These experimental sera are of great value in the identification of the groups. The blood of animals immunised with the "A" variety of paratyphoid bacilli, clumps other A strains in approximately as high dilutions, but only influences paratyphoid B when much less diluted. Paratyphoid B sera do not of necessity agglutinate all strains of paratyphoid B in the same ratio. They have no great action on paratyphoid A. As a general rule neither A nor B experimental sera agglutinate the enteric bacillus.

The vitality of members of the paratyphoid group is higher than that of the coli, typhoid and dysentery bacilli. They are also more resistant to heat than the latter, but exposure at 60° C. for five minutes destroys them.

Paratyphoid A infections in man are of infrequent occurrence. Only about twenty cases have been recorded.

Unlike the typhoid bacillus the paratyphoid group is widely diffused in nature. Morgan has discovered paratyphoid A in the intestinal canal of healthy animals. Boycott isolated paratyphoid A from the urine and fæces of a patient whose blood reacted to paratyphoid B. Smallman¹ found paratyphoid B in the tissues of 10 per cent. of 200 guinea pigs, treated with living or dead typhoid bacilli or their toxins. MacConkey² met with the same experience.

Bacteriological examination of dejecta.—Boycott urges the preliminary incubation of fæces in dulcitate bile-salt broth twenty hours at 37° C. The paratyphoid organisms ferment dulcitate freely and tend to outgrow most of the coli. Plates of MacConkey's bile-salt-neutral-red-lactose-agar are streaked with the above. Dysentery, typhoid and paratyphoid bacilli leave the medium unchanged, while the colon bacillus decolourises it. Dulcitate is at present unobtainable. Loeffler's malachite green broth may be substituted for the elimination of the colon bacillus, and Firth's lactose-litmus-agar for MacConkey's agar. The blue colonies on the latter are inoculated into glucose broth. If acid and gas are produced, enteric bacilli are excluded, and the presence of paratyphoid bacilli rendered prob-

¹ Smallman, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, July, 1905, p. 137.

² MacConkey, *Journal of Hygiene*, 1905, p. 343.

able. They are also introduced into mannite-nutrose-litmus water, which remains unchanged if they are dysentery bacilli, Shiga type. Subcultures are made into litmus milk, in which paratyphoid A causes permanent acidity, and paratyphoid B acidity followed by alkalinity in ten days or a fortnight. In neither case curdling occurs. The clumping reactions of normal serum and of the blood of the patient on the micro-organism isolated is then ascertained. But it must be noted that paratyphoid bacilli obtained from dejecta are not so agglutinable as those grown from the blood. If in the course of an epidemic a paratyphoid bacillus having the same characteristics is repeatedly recovered from the dejecta to the exclusion of every other pathogenic agent, this microbe very probably represents the cause of the epidemic. But this cannot be maintained in sporadic cases. Then the only criterion of certainty is blood culture. Paratyphoid bacilli have been discovered not infrequently in the stools of persons suffering from enteric fever. (Kayser). The diagnosis of paratyphoid fever has been made, in the great majority of instances reported, on account of the isolation of a paratyphoid bacillus from the dejecta, or of agglutinative reactions, on which too great confidence cannot always be reposed, as will be seen later. It is, therefore, not improbable that some of these cases should not have fallen under that heading. Like the typhoid bacilli, paratyphoid may appear in the urine and faeces for weeks after convalescence. Lentz states the latter continue from six to fifteen months in 4 per cent. of the cases.

A few reports of short febrile attacks have been published in which the *B. coli communis* has been grown from the blood. Canon¹ has collected the accounts of five examples of this infection. Coleman and Buxton relate two. Castellani² describes a short fever occurring in Ceylon. In one case he isolated the *B. coli communis* from the blood. Moutier³ reports a *B. coli* fever.

THE DIAGNOSIS OF TYPHOID AND PARATYPHOID FEVERS BY AGGLUTINATION TESTS.

Some normal human bloods will agglutinate completely the typhoid bacillus in a ten-fold dilution. The serum obtained from 2 per cent. of healthy people will produce traces of clumping when diluted 30 times. Also a normal blood diluted 50 to 150 times may clump certain paratyphoid strains. Several cases of meningitis have been reported in which the blood has agglutinated the *B.*

¹ Canon, *Die Bakteriologie des Blutes bei Infektionskrankheiten*, 1905.

² Castellani, *Journal of Hygiene*, January, 1907.

³ Moutier, *Arch. de Med. exp. et d'anat. path.*, xvi., 5, p. 649.

typhosus in 30- or 40-fold dilutions. In streptococcic, pneumococcic, proteus and coli infections a positive reaction up to 1 in 40 has been observed. By inoculating a rabbit with proteus and staphylococcus Jochmann¹ obtained a serum capable of clumping the enteric bacillus when diluted 640 times. Lüdke² and Netter³ found a reaction from 1 in 20 to 1 in 1,000 in various diseases of the liver. Kaemmerer,⁴ however, in investigating fifty cases of jaundice, noted that the blood of two only clumped the enteric bacillus. My own observations on the blood of cases of epidemic jaundice, hepatic abscess and kala-azar infection of the liver have yielded negative results. I have not observed clumping of the enteric bacillus with a 20-fold dilution of the blood examined macroscopically at the end of twenty-four hours. Nevertheless it is clear that a positive Widal reaction with the typhoid bacillus is not always indicative of enteric fever. On the other hand, it cannot be too strongly emphasised that the absence of the agglutination of the enteric bacillus in a febrile case does not exclude infection by that microbe. Coleman and Buxton state that in 10 per cent. of 604 cases the serum reaction on *B. typhosus* was negative, although that organism was grown from the blood. Warfield⁵ isolated the enteric bacillus from the blood of thirty-seven patients. In twelve of them the clumping reaction failed. Seeman⁶ records a negative Widal reaction in eight out of thirty-two cases the blood of which gave the typhoid bacillus. Perquis in twelve out of thirty-eight. Busquet⁷ in eight out of forty-three. Rolly⁸ in sixteen out of fifty. Ruata⁹ in two out of twelve. Castellani¹⁰ in four. Hewlett¹¹ in three. Kayser grew typhoid or paratyphoid bacilli from the blood of nineteen cases which failed to clump the respective cultures. His cases were examined mostly in the second week of the fever. I myself failed to obtain agglutination in a 20-fold dilution in twenty-eight febrile attacks which were afterwards proved to be enteric fever. The importance of repeating the blood test is recognised by all. Lentz relates a case in which the serum reaction was negative till the

¹ Jochmann, *Zeit. f. Klin. Med.*, lvii., p. 27.

² Lüdke, *Bull. de l'Inst. Pasteur*, January 30th, 1905, iii., p. 58.

³ Netter and Ribadeau-Dumas, *C. R. Soc. Biol.*, 1905, lix., p. 486.

⁴ Kaemmerer, *Berlin Klin. Woch.*, June 27th, 1904, p. 699.

⁵ Warfield, *Bull., Clin. Lab., Penn. Hosp.*, October, 1903, i., p. 77.

⁶ Seeman, *Wien Klin. Woch.*, 1902, xv., p. 22.

⁷ Busquet, *Thèse de Paris*, 237, 1903-1904.

⁸ Rolly, *Münch. Med. Woch.*, li., p. 24.

⁹ Ruata, *Ref. Med.*, xx., pp. 17, 449, 1904.

¹⁰ Castellani, *Cent. f. Bakt.*, April 16th, 1902.

¹¹ Hewlett, *Amer. Journ. Med. Sc.*, 1902, p. 200.

twenty-eighth day of the fever, and Coleman one till the seventy-first day. In a recent typhoid epidemic in South Wales¹ in which there were between eighty and ninety simple continued fever or "influenza" cases to about a dozen of typical enteric, positive serum reactions were observed only on a second or third examination of the milder cases. In the seventeenth annual report of the Medical Officer of Health, West Riding of Yorkshire, reference is made to an outbreak of fever in 1890. Many of the cases were typical enteric, while many others were not, and were called under another name. In 1905 another epidemic occurred presenting a similar feature of the mixed type of illness, but now Widal's reaction repeated on several occasions demonstrated that the whole outbreak was enteric pure and simple. S. Monckton Copeman in his report on the prevalence of enteric fever at Fulbourn Asylum, Cambridge, states that owing to the mild symptoms presented by many of the patients earliest attacked the disease was called "influenza," but the results of serum testing, more than once if necessary, showed the true nature of the fever.

In paratyphoid A infections in man the index is usually low, 100 to 200. In paratyphoid B infections the reverse is the case, and the blood of patients from whom this microbe has been isolated may clump it when diluted 140,000 times (Zupnik²). Human paratyphoid sera most often have only a feeble effect on the typhoid bacillus, yet Schottmüller,³ Drigalski-Conradi, Jurgens,⁴ Hunermann,⁵ have reported exceptions.

The sera of typhoid patients, on the other hand, may agglutinate the paratyphoid group in as high as, or in higher dilutions than, they clump Eberth's bacillus. Fox,⁶ Gräf,⁷ and Jurgens each record instances in which the serum derived from a patient proved to be infected with Eberth's bacillus by blood culture has clumped the paratyphoid in higher dilutions than the typhoid. This fact is of great importance to remember. When a human serum agglutinates the typhoid bacillus in higher dilutions than the paratyphoid, then the infection is probably typhoid. But when a human serum acts more energetically on the paratyphoid than on the typhoid, we must not conclude on that account that

¹ *Brit. Med. Journ.*, February 2nd, 1907, p. 342.

² Zupnik, *Deut. Med. Woch.*, 1905, p. 1749.

³ Schottmüller, *Münch. Med. Woch.*, 1902, xlix., p. 38.

⁴ Jurgens, *Deut. Med. Woch.*, January 3rd, 1907, p. 4.

⁵ Hunermann, *Zeit. f. Hyg. u. Inf.*, xl.

⁶ Fox, *Univ. of Penn. Med. Bull.*, 1905, xviii., p. 52.

⁷ Gräf, *Zeit. f. Hyg. u. Inf.*, September 2nd, 1906, liv., p. 201.

the fever is paratyphoid. We may in such a case gain some aid by making use of Castellani's test.¹ He immunised a rabbit against Eberth's bacillus, and found that its serum not only clumped that micro-organism but would likewise agglutinate the *B. coli communis*. Treatment of the serum with an excess of typhoid bacilli removed both the coli and typhoid agglutinins. He then inoculated an animal with both coli and typhoid cultures. The serum in this instance, after saturation with Eberth's bacillus, still retained its activity on the colon bacillus; and when saturated with the colon still agglutinated the enteric bacillus. Therefore, if we are called upon to investigate a serum which clumps both the typhoid and paratyphoid emulsions and surmise that it arises from a true typhoid infection, we first find the limits at which it clumps the paratyphoid bacillus. Then we treat a portion of it diluted ten times with an excess of typhoid agar emulsion. After a stay of two or three hours in the 37° C. chamber, we redetermine the agglutination index. If this serum be derived from a patient suffering from typhoid fever the paratyphoid agglutinins will have fallen to zero. If, on the other hand, the blood was obtained from a paratyphoid patient, the paratyphoid index will remain the same as on the first determination. This test has been extensively used. Rieux and Sacquepée,² who have devoted much attention to the method, conclude that it usually indicates the infecting organism. That is to say, the bacillus which deprives the serum of all the agglutinins is the cause of the fever. The rule, however, is not absolute, and anomalous results are not infrequent.

In conclusion, it may be added that to gain the fullest information possible by means of serum reactions, it is necessary to find the limits of dilution at which the blood acts on the micro-organisms, and by repeated examinations to trace out the agglutination curve. It is essential also to control the cultures used by means of experiments with the blood of normal individuals.

The following are the only two examples of paratyphoid infection which have come under my notice. Both occurred in Pretoria:—

(1) Fever with typhoid-like course and lesions. Paratyphoid A bacillus from spleen.

A native youth gave a history of an illness which resembled enteric fever of some weeks' duration. On admission to hospital he presented the usual signs and symptoms of that disease. Shortly

¹ Castellani, *Zeit. f. Hyg. u. Inf.*, 1902, xl., p. 1.

² Rieux and Sacquepée, *C. R. Soc. Biol.*, December 16th, 1905, lix., p. 663.

afterwards he developed lobar pneumonia, from which he succumbed. Typical healed and healing enteric ulcers were found in the lower part of the ileum, which was much congested. Somewhat higher the Peyer's patches were greatly thickened. Small central ulcers were observed in a few of them. The mesenteric glands were slightly enlarged and congested. The upper lobe of his left lung was in a state of pneumonic consolidation. The paratyphoid bacillus was isolated from his spleen, which weighed 8 ounces, but Eberth's bacillus was not detected. Fraenkel's pneumococcus was recovered from the pneumonic lung. His serum did not agglutinate the typhoid bacillus in a 50-fold dilution, but reacted with the culture from his spleen. This growth resembles the enteric bacillus in being a motile rod which does not retain the stain with Gram. Unlike Eberth's bacillus, it has two flagella at each end only; and it produces acid and gas in glucose broth. It does not ferment lactose nor does it curdle milk, and thus differs from the colon bacillus. Litmus milk is rendered permanently acid. This identifies it as a paratyphoid A strain. Further resemblances to paratyphoid A are found in its behaviour in broth, gelatine, agar, potato, Proskauer and Capaldi's, Drigalski-Conradi's, Firth's litmus-lactose, neutral-red, caffeine, malachite-green, orcein, tartarated iron, nutrose-litmus, and sanatogen-litmus media, the latter two combined with lactose, glucose, saccharose, maltose, mannite, salicin. The identification by cultural tests is, therefore, complete, and is confirmed by means of serum reactions. Anti-typhoid serum (titre 600) in a 50-fold dilution does not clump it. The blood of a rabbit immunised with paratyphoid A (Brion and Kayser) agglutinates the splenic culture in as high dilutions as paratyphoid A. Moreover, treatment of the serum with an emulsion of the above, described bacillus removes all the agglutinins for paratyphoid A (Castellani's test). Also the blood of a rabbit inoculated with this South African bacillus is as effective on paratyphoid A as on it. Paratyphoid A, too, deprives this serum of all the agglutinins capable of acting on the growth. Experimental paratyphoid B serum in a 50-fold dilution fails to clump it. The bacillus does not grow on agar which has served as a medium for *B. coli*, *typhosus*, paratyphoid A, paratyphoid B.

(2) Enteric-like fever.—Paratyphoid bacillus (new type) from subperiosteal abscess of tibia.

S. S. C. had contracted enteric fever in Egypt fourteen years previously. The illness for which he was admitted had a sudden onset marked by rigors, headache, pain in epigastrium and vomiting. He attributed his ailment to some salad he had eaten some

days before, which might have been contaminated with sewage. His temperature curve pursued an enteric-like course and had declined to normal limits in twenty-one days. His blood, tested in the third week of the disease, gave a positive reaction with the enteric bacillus in a 50-fold dilution. No sooner had the fever abated than he complained of pain in his left tibia of marked severity at night. A fortnight later a free incision was made over the painful area which had now become swollen and inflamed. About 7 cc. of yellow pus were evacuated which contained in pure culture the paratyphoid bacillus. This was agglutinated by his serum in a 50-fold dilution, but not in a 200-fold. Normal blood was without action on it. Strict precautions were taken to prevent contamination at the time of the operation and subsequently. Consequently, after an interval of a fortnight, agar slopes streaked with a glass filament which had been introduced into the bottom of the sinus again gave the micro-organism in pure culture. The wound healed in a month. After a time, however, the scar broke down, but the sinus thus exposed proved sterile. A sequestrum was ultimately removed.

The microbe isolated is a feebly motile rod, possessed of three long flagella at either end, which stain with difficulty. It is Gram negative and non-spore bearing. In broth it grows rapidly with even turbidity during the first twenty-four hours. Later a pellicle forms. Not a trace of indol is observed in a week, though marked in three weeks. On gelatine the colonies resemble those of paratyphoid A. There is no liquefaction. On agar there is thick growth, almost *B. coli*-like. On potato it produces a creamy layer in twenty-four hours without any gas bubbles. In litmus milk it produces strong acidity and reduces the colour. No curdling takes place. Nevertheless, on boiling these milk cultures immediate clotting occurs, a characteristic which Biffi¹ has observed in the close allies of *B. coli communis*, though not in paratyphoid A. In lactose media no gas is generated but only slight acidity. On the other hand, in glucose media its action is very energetic, acid and gas being abundantly formed. Maltose, cane sugar and salicin are also rapidly fermented with production of acid, while mannite is but feebly changed. Glucose-neutral-red media become fluorescent. On Drigalski-Conradi's and Firth's litmus-lactose-agar the colonies are blue. Acidity is produced in twenty-four hours in Proskauer and Capaldi's No. 1 medium, which then becomes alkaline. In Proskauer and Capaldi No. 2 there is faint acidity in

¹ Biffi, *Bull. de l'Inst. Pasteur*, May 15th, 1907, v. ix., p. 380.

the first day, followed by increasing alkalinity. In hydrocele serum litmus water a pellicle forms and clotting takes place. In 1 per cent. sanatogen or nutrose, litmus water media combined with various sugars, pink milky turbidity is produced in the glucose, cane sugar, maltose, salicin tubes. The action is much less marked in those containing lactose and mannite. Slight growth is observed on agar, from which the Eberth's bacillus and paratyphoid A have been removed, but none on old paratyphoid B and *B. coli* tubes. Anti-typhoid serum (value 600) does not clump it in a fifty-fold dilution. Paratyphoid A, paratyphoid B, Gaertner and Aertryck sera, in dilutions above ten, do not agglutinate it. The blood of the rabbit immunised with the paratyphoid bacillus of the previous case in a ten-fold dilution, had no action on it. In short, while this bacillus differs from *B. coli communis* in not fermenting lactose, and in its feeble action on mannite, it claims relationship to the paratyphoid group by its marked action in generating acid and gas in glucose media. Nevertheless, it is separated from the more common types of paratyphoid A and B, through its splitting action on cane sugar and salicin. Its production of permanent acidity in milk would tend to connect it with paratyphoid A, but its more vigorous growth on agar, and its strong reducing power on litmus-neutral-red, malachite-green and orcein, distinguish it from the cultures of paratyphoid A in my possession. It may have some affinity to Strong's paratyphoid bacillus which fermented cane sugar. The low agglutinability of the bacillus by the patient's blood (50) is rather remarkable, but both Bancel and Batty Shaw have noticed this phenomenon in typhoid cultures isolated from post-typhoid abscesses. Paratyphoid bacilli from the dejecta frequently present the same peculiarity.

It is probable that the patient passed through an attack of enteric fever, since his serum reacted with typhoid emulsion in the third week in a 50-fold dilution, and in no higher dilution with the paratyphoid bacillus isolated from the abscess. It is only in exceptional instances of paratyphoid infection in man that the enteric bacillus is clumped in as high dilutions as the paratyphoid. Moreover, a month after the abscess had been evacuated, his blood agglutinated the typhoid bacillus in a 60-fold dilution, but failed to clump the paratyphoid in a twenty. Libman¹ relates a paratyphoid infection secondary to enteric fever. But the list of cases reported of suppuration arising from paratyphoid bacilli is not long. Widal and Nobécourt² obtained paratyphoid B from a thyroid abscess. Achard

¹ Libman, *Journ. of Medical Research*, 1902, viii., p. 168.

² Widal and Nobécourt, *Sem. med.*, 1897, xvii., p. 285.

and Bensaude¹ from a case of osteomyelitis. Kranepuhl² also from an abscess. B. Fischer³ from a subcostal abscess. Cushing recovered paratyphoid A from a chondrosternal suppuration. Pratt⁴ found paratyphoid B in an inflamed testis.

With regard to the specific treatment of these fevers, the theory and results of therapeutic inoculations of killed cultures of the invading microbe in the course of infections, were discussed in the number of our Journal for September last.⁵ Attention was drawn to Fraenkel's series of typhoid cases treated by hypodermic injection of typhoid vaccine. More recently M. W. Richardson⁶ has recorded twenty-two cases of enteric fever benefited by typhoid toxin inoculations.

We are now required to isolate the infecting agent from the blood of febrile cases as soon as they come under our observation, not only for diagnostic and prognostic, but for therapeutic purposes, since recent researches show that the early specific treatment of a fever with a vaccine prepared with the actual invading microbe, offers a more hopeful prospect of success than the use of empirical remedies.

The main conclusions of this paper may be now summarised.

(1) The typhoid bacillus may be an inhabitant of the bile passages or alimentary canal without producing illness.

(2) When the typhoid bacillus invades the blood it may cause trivial symptoms with short pyrexia only.

(3) Paratyphoid infections cannot be distinguished clinically from enteric.

(4) Paratyphoid infections are less common than typhoid.

(5) A negative serum reaction with the enteric bacillus, or a positive reaction with a paratyphoid bacillus, is not sufficient to justify a diagnosis of paratyphoid fever.

(6) In every febrile case blood cultures should be made at once for diagnostic, prognostic and therapeutic purposes.

I am greatly indebted to Dr. A. E. Boycott of the Lister Institute, for the paratyphoid A, paratyphoid B, Gaertner and Aertryck rabbit sera, and to Professor Leishman for the paratyphoid A (South Africa) rabbit serum.

¹ Achard and Bensaude, *Bull. et mem. de la Soc. med. des Hop. de Paris*, xiii., 820.

² Kranepuhl, *Münch. Med. Woch.*, 1905, p. 1331.

³ Fischer, *R. Koch's Festschrift*, pp. 271-296.

⁴ Pratt, *Boston Med. and Surg. Journ.*, 1903, cxlviii., p. 137.

⁵ Birt, *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, September, 1906, vii., p. 279.

⁶ Richardson, *Journ. of Med. Research*, February, 1905, xiii., p. 3.

HOUSE FLIES AND THEIR WAYS AT BENARES.

BY MAJOR F. SMITH, D.S.O.
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THE following observations were made at Benares, India, at the end of the cool season and beginning of the hot weather (February to May), at a time when there is scarcely any rain.

Finding a fair number of flies about in the cantonment, in spite of the dryness of the ground and the absence of manure, one began to ask where the insects came from, and no one seemed to know. A hospital attendant, in explanation, produced a piece of string with fly deposits on it and claimed that these little black spots of excrement were flies' eggs. He was not by any means alone in holding this opinion.

In this country almost every scrap of cow-dung deposited is picked up at once and moulded into thin, flat cakes, which are rapidly dried in the sun and stored for fuel. So valuable is this commodity, that the cowherd often carries a basket in which to collect the droppings of the animals at the earliest possible moment. Horse- and donkey-dung is also used for fuel and, moreover, seems to dry up so rapidly, that larvæ would, it might be supposed, not have time to develop in it under an Eastern sun in dry weather.

The filth trenches used for the contents of latrines are too far away from cantonments to be taken into account.¹

Isolated deposits of human ordure are regarded as harmless. On my suggesting, indeed, apart from any connection with the breeding of flies, that such deposits among the outbuildings of an officers' mess are undesirable, I am politely corrected by a regimental officer, who informs me that anyone with Indian experience knows that human excrement dries up in three days under the Eastern sun, and may therefore be disregarded in the sanitary sense. The observations which have been made show, among other things, that human excrement does dry up in three or four days, at certain seasons of the year; they also show, however, a new reason for regarding it as by no means harmless even in single deposits.

The first step of enquiry was, to find out what insects concerned

¹ See p. 681 of the ROYAL ARMY MEDICAL CORPS JOURNAL, December, 1906. Captain G. D. Franklin, I.M.S., also p. 224, February, 1907, Captain C. H. Straton, R.A.M.C., concerning filth trenches and flies.

us; and in this regard it was noticed at once that the majority of the species of flies about us were not likely to be harmful to man—unless indeed, they polluted his drinking water.

Flies captured in the men's rooms, in hospital wards and in kitchens, were almost entirely of one or other of two varieties, viz., *Musca domestica* and *Musca entaniata*. Flies taken off ward utensils in the verandah annexe were *M. domestica* and *M. entaniata*. These are the flies which, in the season of the year dealt with, are at home in barracks—flies which settle upon food or drink, wander about the person and upon bedding, tablecloths, plates, cups, &c. Other species may occasionally get into a room, but they mostly buzz about the windows and seem anxious to get out again to the open air. Two other species, one resembling *domestica*, the other roughly like *entaniata*, but both unidentified, were taken in the neighbourhood of dwellings. They have not yet been incriminated. One rather ornamental fly (*Anthomyia tonitru*), generally resembling the smaller house flies, but having transverse white bars on the thorax, was frequently found sitting on walls and furniture in verandahs and offices; but it seemed to be merely taking refuge from the heat. Its interest in man, if it has any beyond breeding in human ordure, was not discovered.

In this part of the world deposits of human excrement are dotted about everywhere. Outside cantonments and cities the natives use chiefly the open country for the purposes of nature—latrines are not in fashion. Sheltered places, such as a watercourse, the banks of a pond, a garden, or a field containing a standing crop, find favour in this regard. Running along the back of the barracks and hospital here, and just on the cantonment border, is a stream which in March was nearly dried up, and consisted of a series of pools. Once in March and again in April a downfall of rain filled the stream in a night to overflowing—the water having risen rapidly 6 feet or so and rapidly subsided. On May 3rd the stream bed was quite dry. The banks of this stream (which is a tributary of the Ganges) and the dry portions of the bed are largely resorted to by natives as a latrine. Excrement deposited in places such as those above-mentioned is very quickly dried on its external surface, in the sun, but not before flies have deposited eggs or maggots, as the case may be, upon it. The surface of the mass becomes a more or less impervious covering which retards evaporation and thus allows the interior to remain moist for three or four days.

On turning over a three days' old deposit of fæces, a mass of

maggots was disclosed beneath. The disturbed maggots at once began to make for cracks in the earth or to go down dung-beetle holes and worm holes. Meanwhile ants attacked them and carried off some. White ants had already begun to weaken the defensive wall of fæces by eating it away. The fæcal covering was replaced, but on the following day nothing remained but dry, hard fæces, no longer adherent to the ground. The fæcal mass crumbled up and in a few days all trace of it had gone. Where were the maggots?

Digging into the soil below a fæcal deposit four days' old, brought to light many maggots at a depth of 5 or 6 inches. Larvæ, and the earth in which they had been found, were placed in a jar under a net. Fourteen days from the estimated hour of their birth as larvæ the flies appeared and proved to be *M. entaniata*. A good many similar observations have been made, and always in the main with like result, but often with much fewer flies and sometimes with different species of flies.

Sometimes the digging below a dried deposit did not bring to light any maggots, though plenty had been present in the same fæces before it became dry. This was the case with a deposit on some hard, dry soil in a flower-pot—sections of the earth were made in vain—nevertheless, from this soil under a net, flies appeared on the fourteenth and fifteenth days.

It may be surmised that under natural conditions the flies are able to get to the surface by the same channel which the maggots went down. In glass jars containing fæces on earth which had been disturbed in the course of removal to the jar, flies have been seen struggling for more than twenty-four hours in apparently vain efforts to get through the earth lying between them and freedom; nevertheless, many found a way through this earth.

Flies obtained from human ordure here, and identified, have so far been *M. entaniata* and *A. tonitru*. Unidentified, from same source, a large, robust, grey fly with red brown head and three dark bars along the thorax. Of these three only the first-mentioned frequents wards and rooms. The production of flies from sources such as those described must be enormous, for the country is being continually dotted with fæces.

Incidentally, one sees how the bed of a stream, or any depressed portion of ground, becomes impregnated with intestinal bacilli. The maggots and dung-beetles must take down many bacilli on their bodies and the germs will be protected from the sun by the overlying soil. It is conceivable indeed, that the newly emerged fly or beetle may be already a carrier of intestinal microbes, as

a legacy from his maggot forbear, and before the fly itself has encountered infected fæces. Observation of the stream above-mentioned leads to the estimation that there is not a square foot of the bed which has not received a fæcal deposit during the year.

Dog excrement is also concerned in the production of flies. From quite a small deposit in front of the hospital—weight perhaps $1\frac{1}{2}$ ounces—a crop of house flies, *M. entaniata*, was obtained as early as the eighth day. It seems probable indeed, that any fæces which remains moist for three days or so will support flies in the larval stage long enough to permit of the succeeding stages being gone through. From the droppings of fowls minute flies of unknown species were obtained.

The variations in the length of time occupied between the egg and fly stage seem wide and are presumably due to differences of nutriment, amount and duration of moisture, &c.

Cow-dung is similar to human ordure in fly-producing capacity. In the few deposits which escape the keen eyes of the fuel hunters, and therefore remain undisturbed, crowds of maggots live under the hard external surface. Such a deposit was noted to cover hundreds of maggots; next day none were found. Digging in the ground beneath and around brought to view a few maggots widely dispersed and at 2 or 3 inches depth. From these and from the soil in which they were found, as well as from similar deposits, the following flies among others were obtained, *M. domestica* and *M. entaniata*.

Even in the afore-mentioned cow-dung fuel cakes, in spite of rapid drying, a few maggots (very few in dry weather) survive long enough to get into the pupal stage, and thus the fly population is swollen. Experimentally, flies have been bred out of fuel. In the moister season it may be that fuel will dry less rapidly and will consequently afford nourishment to a greater number of maggots.

Horse- and donkey-dung in single deposits has, so far, given only flies which are not domestic in habit. But the results might be different in less dry weather. From a collection of a day's fresh droppings of three horses, *M. domestica* were obtained on the eighth day after the laying of the eggs.¹

Flies are much more numerous in native quarters than in barracks and European quarters. Habits before alluded to are sufficient explanation of this. Villages are full of cow-dung fuel and surrounded by human ordure. In our own cantonment village

¹ In Mr. E. E. Austen's lucid article in the June number of the JOURNAL for 1904 the house-fly is said to breed chiefly in horse-dung in temperate climates.

for natives, flies, though less common than in country villages, are much more numerous than in barracks; also owing partly to the keeping of cows and cow-dung fuel as well as to deposits of human ordure. For wherever there is a sheltered spot in the shape of a disused yard, an uninhabited, broken-down house, the back of a cow-house and so forth, there fæcal deposits in abundance will be found; some of the yards, indeed, have been unauthorised public latrines. In the cantonment village maggots were found also in disused latrine pails and under slabs at the outlets of house drains, but the species was not ascertained. Flies, apart from those bred on the spot, may be supposed to be attracted, moreover, to the cantonment village and bazaar by reason of the greater amount of filth and smells there than in barracks.

Some idea of the comparative scarcity of flies in barracks—for all that has been said above—may be gathered from the fact that jam, sugar and milk may be exposed on the office verandah for, sometimes, an hour, without being once visited by a fly. (It is a different matter with highly odorous things, such as decomposing meat.) Indeed, the use of foodstuffs as baits for flies had to be abandoned. Whether flies would be equally rare in a country camp is another question, but evidently there are conditions here under which the fly population does not become oppressive; and these highly satisfactory sanitary conditions have been evolved in the course of time by the labours of the Medical Services of the Army. I have no hesitation in sounding the trumpet, inasmuch as being a new-comer in this country I have had no hand in the work.

By way of finding out if dead animals are the breeding grounds of house flies, a crow was shot and exposed for a day or two. Many house and other flies settled upon it. It was eventually enclosed in a net. On the fourteenth day after the crow's death, and six days after the maggots had assumed the pupal stage, innumerable flies were hatched out. They were all *Pycnosoma orientale*, which has not been found in rooms or wards, except as an unwilling occupant struggling at the window.¹ Not one house fly appeared from the crow. This, however, is not conclusive testimony, for it seems usual to have a preponderance of one kind of fly in a medium. Not infrequently the flies from a specimen of human ordure have been all *M. entaniata*.

With the object of ascertaining whether flies breed in ordinary

¹ In Mr. Austen's afore-mentioned article, however, it is noted that other species of *Pycnosoma* were numerous and pestilential in camps in South Africa.

ground, as distinguished from organic deposits, the following observations were made. From a dampish grassy spot under a tree in the hospital compound, a spot where it was thought the ground was likely to be polluted by slops or urine, a square foot of earth about 5 inches deep was dug out. This earth was exposed for fourteen days in an open vessel, while being watered sufficiently often to keep it always moist. Similar portions of earth were obtained from alongside the latrine for natives, from a soiled wet patch in front of a native house and from a dry space in the hospital compound. The specimens were then placed under nets. In the course of a month no flies appeared.

Conclusion.—This paper does not profess to give an exhaustive list of all the breeding media of the house flies; it is merely an account of *some* of the breeding media of *some* of the house flies, and it represents work done in one's spare time when employed on ordinary Royal Army Medical Corps duty in hospital, barracks and cantonment. The gist of it is that *man and his domestic animals provide the breeding media in their own excretions*, and it seems likely that the flies will breed in whichever of these media be available.

The moral is obviously that we should pay increased attention to the cleanliness of the ground in regard to excreta and to the removal or destruction of excreta.

I have to thank Mr. E. E. Austen of the British Museum, who identified the flies, for this addition to many kindnesses received at his hands.

Captain R. J. Franklin, R.A.M.C., and Captain H. De Lacy, I.S.M.D., took keen interest in the observations and gave me valuable assistance and advice.

THE ORGANISATION OF RECRUITING IN THE NORTHERN COMMAND.

BY LIEUTENANT-COLONEL S. WESTCOTT, C.M.G.
Royal Army Medical Corps.

(Continued from page 16.)

Perforated Tympanum.—The examination for this defect is often liable to be missed or imperfectly carried out. The recruit should be made to force the air through the Eustachian tubes by blowing hard into the closed nose. If a perforation is present it should disqualify.

Obstruction to Nasal Breathing.—This can be at once detected by requiring the recruit to expire through each nostril separately, with sufficient force to produce a note; a little experience of the quality of this, as produced under different conditions, is sufficient to enable an estimate of the degree of obstruction to be formed.

Chronically Enlarged Tonsils should be removed at a civil hospital before a recruit is accepted.

Disorders of the Heart.—The soldier's heart has to bear great strains, it should therefore be sound. The weak heart of the man in want of food can be made strong, but any sign of structural disease should cause rejection. Tachycardia should be regarded with suspicion; that due to psychical causes usually abates during the examination; if it does not do so the applicant should be seen again at a future date. A smoker's heart should also cause rejection, the applicant being told to give up smoking and come up for examination again.

Varicose Veins.—Veins enlarged beyond a limited extent, whether they are varicose or not, should not be accepted. "Limited" in the Instructions should be interpreted stringently.

Varicocele.—It is so seldom that varicocele causes any trouble that considerable risks should be run; if every man with a varicocele were rejected, a very large number of good men would be lost for the sake of the few who may be inconvenienced during their service. In dealing with this affection the "limited extent" of the Instructions should be interpreted leniently. A great deal can be done by the exercise of discretion in judging such cases; the disability to be feared is pain caused by periphlebitis, due to the constant friction of the varix on the pubic bone during violent exercise. Therefore a heavy pendulous varicocele, associated with

inguinal varix, should cause rejection. These aggravated varicoceles can be cured by operation, and the man be accepted afterwards; but it is advisable to bear in mind the remote risk of ligature of a varicocele when recommending recruits to submit to it. They are well described in a paper by Corner and Nitch (*British Medical Journal*, January 27th, 1906). There is, in all cases, venous stasis leading to fibrosis of the testicle, and in many cases to hydrocele. Whilst holding the appointment of herniotomist, a considerable number of varicoceles were sent to me for radical cure; my experience was that the best results followed ligature through an incision in the inguinal region; asepsis can be assured, and there is more certainty that the vein only will be included in the ligature. The operation should not be performed by the inexperienced; but the operating surgeons of the large civil hospitals, if approached personally, are always willing to help us.

Tendency to Hernia.—The most convenient way of demonstrating this defect is to require the recruit to stand on tip-toe, and then put his arms above his head; this stretches the abdominal walls, and on coughing the inguinal canals appear as clearly as in a dissection. It is quite possible, when inserting the point of the finger in the external ring, to miss a bubonocoele, which is a somewhat common fault.

“Radical Cures.”—Men who have had these performed for varicose or enlarged veins, varicocele and hernia, may be accepted. A thickened cord persists after the cure of varicocele, which may be mistaken for a failure, and enlargement and loss of elasticity of the testis may be permanent, but these signs should not cause rejection. A cure of hernia should not be approved till at least three months have elapsed since the operation, as the parts will not have become sufficiently consolidated to stand the strain of training.

Vision.—The minimum degree of range and acuteness of vision required from the recruit is the ability to read Snellen's test type D.=24 at 20 feet, or better, with each eye without glasses. Or if he can read D.=6 at the same distance with one eye, without glasses, and not less than D.=36 with the other eye, without glasses, he will be considered fit. He should stand with his back to the light and the types be placed where a good light can fall upon them. Each letter must be recognised separately. A useful estimate of the quality of vision to be expected in the recruiting room is given by Yarr in his report on the examination of 800 applicants for enlistment at St. George's Barracks in 1904:—

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Emmetropia	49 per cent.
Hypermetropia	28 "
Hypermetropic astigmatism	7.9 "
Myopia	3.12 "
Myopic astigmatism	..	..	..	3.12 "
Mixed "	..	..	..	4 "
Other defects	..	..	..	5.6 "

The 800 men examined by him were brought in by the recruiters after having passed the preliminary test with the old dots, but a certain proportion of those approved by the recruiters always fails on examination by the medical officer. Still this report gives an approximate estimate of the quality of vision to be expected at recruiting offices in general; about half the applicants will have some defect, the most common being hypermetropia. The amplitude of accommodation at the age of 18 is 11 D. So that a recruit may be able to read the requisite $\frac{6}{34}$ and yet have a very high degree of hypermetropia. Such men will never make good shots, they have constantly to use their accommodation, the range of which lessens with each year—at the age of 30 it is 7 D. only—and with the condition of health and fatigue. If called upon to decide whether a recruit with defective vision due to hypermetropia should be discharged, I am of opinion that 4 degrees, or over, should exclude. The number lost with this limit would be very small, as the hypermetropics with over 4 D. only numbered 3.5 per cent. of those examined by Yarr. The distant vision of a recruit with 2 D. myopia as far as shooting is concerned is *nil*, so that I would not accept, or would discharge, any degree over 1 D. A moderate degree of simple hypermetropic astigmatism is not of much moment; 1 D. may be disregarded, and I would not discharge a recruit who had less than 5 D.

The additional standard of D. = 6 with one eye, and D. = 36 with the other, introduced in Army Orders of July, 1906, will have the effect of reducing the numbers rejected for defective vision approximately by one third, and of increasing the number of men whose vision renders it possible for them to shoot at long ranges, for they have normal vision in one eye, in contradistinction to the imperfect vision in each eye accepted under the old standard of D. = 24 in each eye. There were 1,770 men rejected for defective vision in the Northern Command alone from April, 1905, to September, 1906; of these doubtless a considerable proportion had other defects; if we estimate this proportion as high as 50 per cent., a sixth of the 1,770, or 295, would have been accepted. The simplest, quickest and most accurate method of determining errors of refraction is by retinoscopy. It is so simple and so easy to learn that I am surprised that

its use is not more general than it is. A few lenses, a mirror and a simple frame are the requirements, no dark room or special lamp being necessary; a candle placed over the head of the recruit in a room on the shady side of the building with the blinds drawn, and in a few moments any defect can be estimated with exactness. No recruit should be discharged from the Service for defective vision unless his inability to pass the test recorded in his medical history sheet is verified by the estimation of his refractive powers by retinoscopy.

Height, Weight and Chest Measurement.—There is a standard of these laid down for boys of the Royal Artillery and Royal Engineers, but if it is not fulfilled they may be specially enlisted if it is probable that they will attain the necessary development by the age of 18. The following table from the report of the Anthropometrical Committee, 1883, of the average height of all classes, town and country, may therefore be useful:—

Age			Height Ft. Ins.			Yearly increase in ins.			Yearly increase in lbs.
14	..	..	4 11 $\frac{1}{2}$						
15	..	..	5 2 $\frac{1}{2}$	..	..	3	..	..	10 $\frac{3}{4}$
16	..	..	5 4 $\frac{1}{2}$	..	..	2	..	..	17
17	..	..	5 6 $\frac{1}{2}$	..	..	2	..	..	12
18	..	..	5 7	..	..	$\frac{1}{2}$	..	..	2 $\frac{1}{2}$

The minimum height for the Line is, at the age of 18, 63 inches: 1,259 applicants were rejected for deficient height in the Northern Command during the eighteen months under review. In the Lancashire group, in twelve months, 710, or 6 per cent., were rejected; of these 402 were at Manchester, being 12 per cent. of those who offered for enlistment at that centre. In the Border group 200, or 4 per cent., were rejected in the eighteen months; 300, or 3 per cent., in the Yorkshire group in the same time; and 40, or 3 per cent., in the Midland group in four months. Doubtless a great proportion of these had other disqualifying defects, but still a great many sturdy little men were lost, men who would make much better soldiers than some of the taller, but less robust, weeds which were accepted.

Approving officers do occasionally apply to the Adjutant-General for special authority to enlist men under height, and this was granted in 176 cases, or 1·8 per cent., of those raised; but the acceptance is very doubtful, and they seldom like to apply in the case of men who fall short of the standard by more than half an inch.

With any fixed standard of height, weight and chest measurement, the shorter a man is the more robust and sturdy he is likely

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to be. The mean chest measurement of those accepted was 34-35 inches, and the mean weight 110-120 lbs., so that they were better than the majority of infantrymen.

The following table shows the mean height for age of boys of the recruit class, and also that of all classes, town and country :—

Age			RECRUIT CLASS Height			ALL CLASSES Height		
17	..	..	64½	ins.	..	..	66½	ins.
18	..	..	65½	"	..	..	67	"
19	..	..	66	"	..	..	67½	"
20	..	..	66½	"	..	..	67½	"
23	..	..	66½	"	..	..	67½	"

So that the infantry recruit is taken at 1½ inches under the average height of his own class, and 3½ inches under that of the general population. The mean annual growth of the recruit class is here shown :—

16—17 years	..	..	1½ in.	|	18—19 years	..	..	¼ in.
17—18 "	..	..	1 "	|	19—20 "	..	..	¼ "

The regulations require that an infantry recruit of 18 years, and 5 feet 5 inches or under, should weigh 112 lbs.; but that he may be accepted if under weight from want of food. This is as low as it is safe to go with regard to weight, for if the soldier were below this he would be unable to carry his rifle and kit. The mean annual increase in weight of the recruit class is :—

16—17 years	..	..	10 lbs.	|	19—20 years	..	..	4 lbs.
17—18 "	..	..	6 "	|	21—22 "	..	..	4 "
18—19 "	..	..	6 "	|	23—30 "	..	..	3 "

So that if a Militia recruit is taken at 106 lbs. he will probably be up to the infantry standard when he has reached the age of 18.

The relation of weight to height increases rapidly when the height exceeds 5 feet 2 inches; at 5 feet it is 1·85 lbs. to each inch of height, whereas at 6 feet it is 2·5 lbs. The mean weight of the recruit class at various ages is :—

17 years	..	..	116 lbs.	|	20 years	..	..	132 lbs.
18 "	..	..	122 "	|	21—22 years	..	..	136 "
19 "	..	..	128 "	|	23—30 "	..	..	138 "

Weight varies with age in recruits of the same stature (Roberts).

HEIGHT	WEIGHT					
	At 18 years			At 19 years		
62 ins.	111 lbs.	..	..	113 lbs.
64 "	115 "	..	..	120 "
66 "	120 "	..	..	130 "

It will be gathered from a comparison of these tables with the recruiting standards that the weights for age and height of the latter are based on necessity. If there is any difficulty in filling the ranks with men of 5 feet 3 inches and over, I think that by

maintaining the present standard of weight and chest measurement, and by reducing the height to 5 feet 1 inch, both for the Line and Militia Infantry, a most useful addition to the ranks of sturdy little men of superior quality could be secured.

Chest Measurement.—The method laid down in the Instructions is simple and good, but it is not always understood; recruits are occasionally allowed to perform eccentric movements with the muscles of their chests, in order that they may squeeze through the tests. The arms should be raised above the head, the tape placed round the chest on a level with a spot from 1 to $1\frac{1}{2}$ inches above the groove in the axillary line formed by the contraction of the latissimus dorsi and scapular muscles, the medical officer should then pull the ends of the tape strongly towards himself, leaving the front of the chest uncovered by it, the arms of the recruit are then dropped and the tape is found to hit off the angles of the scapulæ exactly. The recruit is then instructed to let his arms hang loosely by the side and not to contract them during measurement; he is then shown how to inspire deeply, and at the end of maximum inspiration the ends of the tape are folded across the chest in the usual nipple position.

THE INSPECTIONS AT THE DEPÔTS.

The following copy of Standing Instructions will explain the organisation of inspections. They are so arranged that the various details may be continuous, in order that no time may be wasted in preparation.

INSPECTION OF RECRUITS BY THE MEDICAL INSPECTOR, NORTHERN COMMAND.

Requirements :—

Medical history sheets of fresh recruits.

Attestations of Militia.

Nominal roll of fresh recruits on foolscap with half margin, Regimental numbers in sequence. Specimen :—

1116. Jones, W. 30 Sept. Leeds.

Half margin.

1117. Brown, J. 29 Aug. York.

A screened enclosure, with good light.

ORDER OF INSPECTIONS.

- (1) The old Militia.
- (2) The new Line, wearing greatcoats as dressing gowns, singly, in the enclosure.
- (3) The new Militia, in a similar manner.
- (The senior squad of Line recruits should now start on a 3 min. run and 5 min. rest.)
- (4) Dental inspection.
- (5) Training inspection of all squads.

NOTES.

The Gymnasium should be heated in cold weather.

At double Depôts, one should be ordered to parade at the finish of the inspection of the other.

Recruits inspected at the previous visits of the Medical Inspector who are required for training inspection only, should be timed to arrive at the gymnasium after No. 3 inspection.

In cold weather the recruits should be kept warm by exercise while they are awaiting inspection.

The Medical Inspector should compare his work and standards with those of the other inspectors and of every examining medical officer who passes recruits in his Command, by verifying the measurements and estimating the defects recorded in the medical history sheets or discovered on inspection; he should write to the medical examiner at once if any discrepancy is disclosed. He should also note whether the men he is inspecting are of suitable physique for the branch of the Service to which they have been sent, and write to the recruiting officers on the subject if necessary. The Artillery, especially the Garrison branch, and the Army Service Corps require to be observed in this respect. The Medical Inspector should not overlook any defect likely to lead to inefficiency. Examining medical officers perform their duty reasonably, and do not pass a recruit if they do not think he will become efficient, but the majority of officers, including the very best, make an occasional mistake; sometimes this is due to the omission of some detail of the routine inspection and the defect is not discovered, at other times the hopes of the officer have not been realised and the defect has proved to be a drawback during the training.

Of the 7,585 recruits raised during the eighteen months in the Command, 229 were discharged under three months. If from these be deducted 91 rejections for bad teeth, it will be seen that the average twenty-seven medical officers concerned made less than one mistake per half year during the period. Poor physique is a not uncommon cause of discharge, but to insist on medical officers approving only those who are of such fine physique that it is quite certain that they will not break down under training, is to ensure the loss of large numbers of applicants and to deter others from offering. The discharge at the dépôts of recruits who are not likely to become physically fit is an economy; if a mistake is overlooked its repetition will be countenanced and the ultimate cost to the public may be, not a few pounds spent at the dépôt, but a few hundreds in the future on maintenance, transport and hospitals. Then the discriminate discharge of the unfit at the dépôts has an important influence on "waster dumping" which was so notorious in the old days. If one medical officer is allowed to approve a lower standard than another, there is a rush of circulating doubtfuls to his office, which gives rise to painful feelings among the hard working recruiters of the ill-used but more careful offices.

If a medical opinion costs 2s. 6d. it is not sought so freely as one which costs nothing; hence the rejections by Royal Army

Medical Corps officers are more numerous than those by civil practitioners who are paid the above fee per examination.

Table II. gives a rough idea of the relative values of the various recruiting districts as to the numbers offering for enlistment, those finally approved and the percentage of total rejections by the recruiters, recruiting officers and medical officers combined. This gives a better idea of the state of recruiting than the study of medical rejections alone. The table also shows the most common causes of rejection by recruiters and medical officers.

TABLE II.

Period	Group	Regimental district	Offered for enlistment	Finally approved	Percentage rejected	COMMONEST CAUSES OF REJECTION							
						Vision	Heart	Height	Varix	Varicocele	Flat feet	Hernia	Teeth
April, 1905, to March, 1906	LANCASHIRE	Manchester ..	5,022	604	88	430	47	402	40	10	88	16	869
		Liverpool ..	2,888	518	82	166	42	104	62	19	27	10	430
		Ashton-u.-Lyne ..	1,205	289	76	61	8	42	17	12	17	1	202
		Preston ..	959	270	72	45	9	51	32	10	6	19	201
		Burnley ..	743	184	75	43	7	90	5	6	7	4	180
		Bury ..	805	133	85	50	17	18	12	24	14	17	233
April, 1905, to Sept., 1906	YORKSHIRE	Halifax ..	1,904	549	71	140	26	84	19	3	17	13	358
		Pontefract ..	1,438	476	67	114	3	22	4	14	18	1	234
		York ..	778	408	48	45	2	36	3	5	12	5	83
		Beverley ..	877	404	54	41	5	14	16	5	5	4	68
		Leeds ..	1,606	401	75	124	67	27	11	16	5	11	372
		Sheffield ..	2,029	367	82	220	13	129	34	16	12	73	247
	BORDER	Newcastle ..	4,221	1,279	70	307	40	154	73	21	55	27	335
		Richmond ..	775	296	62	34	3	15	2	0	4	0	103
		Lancaster ..	485	233	52	34	6	11	1	1	3	7	59
		Carlisle ..	377	104	73	22	16	19	1	3	2	2	76
	Scarborough ..	186	91	51	12	4	1	1	0	0	0	26	
Aprl., 1906, to Sept., 1906	N. MIDLAND*	Derby ..	730	405	45	19	6	9	3	11	1	6	33
		Lichfield ..	976	346	65	28	9	26	0	7	3	1	71
		Leicester ..	549	151	71	25	19	1	3	8	0	0	71
		Lincoln ..	282	77	73	10	1	4	3	1	2	2	23
Total			28,835	7,585	(68%)	1,770	350	1,259	342	192	298	219	4,274

* In this group, figures under "Commonest Causes of Rejection" refer to the quarter July—September, 1906, only.

Table III. shows the quarterly fluctuation of recruiting in the various groups and districts.

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TABLE III.—SHOWING QUARTERLY VARIATION OF RECRUITING.

A = Total numbers who offered for enlistment.

B = „ „ „ were finally approved.

Lancashire Group of Regimental Districts.

	Man- chester		Liverpool		Ashton- under-Lyns		Preston		Burnley		Bury	
	A	B	A	B	A	B	A	B	A	B	A	B
April—June, 1905 ..	745	123	554	63	150	54	181	45	134	19	135	19
July—Sept. „ ..	1,242	187	609	141	261	98	249	54	200	42	191	26
Oct.—Dec. „ ..	1,119	131	847	146	493	68	272	119	212	70	318	71
Jan.—Mar., 1906 ..	1,916	163	878	168	301	69	257	52	197	53	161	17
Total	5,022	604	2,888	518	1,205	289	959	270	743	184	805	133
Per cent. rejected ..	88		82		76		72		75		85	

Yorkshire Group.

	Halifax		Pontefract		York		Leeds		Beverley		Sheffield	
	A	B	A	B	A	B	A	B	A	B	A	B
April—June, 1905 ..	239	50	216	43	107	63	115	43	222	55	365	33
July—Sept. „ ..	386	147	245	82	149	80	140	79	317	81	351	83
Oct.—Dec. „ ..	285	87	264	97	174	91	176	80	314	82	336	50
Jan.—Mar., 1906 ..	429	94	325	100	188	102	177	73	282	71	433	89
April—June „ ..	264	59	175	63	75	24	118	53	216	49	271	53
July—Sept. „ ..	301	112	213	91	85	48	151	76	255	63	273	59
Total	1,904	549	1,438	476	778	408	877	404	1,606	401	2,029	367
Per cent. rejected ..	71		67		48		54		75		82	

Border Group.

	Newcastle		Richmond		Lancaster		Carlisle		Scarborough	
	A	B	A	B	A	B	A	B	A	B
April—June, 1905 ..	522	66	85	30	51	25	60	7	12	5
July—Sept. „ ..	809	241	96	37	82	29	81	21	44	23
Oct.—Dec. „ ..	1,178	392	158	44	120	61	99	28	50	27
Jan.—Mar., 1906 ..	731	223	185	72	104	50	54	18	36	11
April—June „ ..	435	134	94	49	64	34	28	15	15	6
July—Sept. „ ..	546	223	157	64	64	34	55	15	29	19
Total	4,221	1,279	775	296	485	233	377	104	186	91
Per cent. rejected ..	70		62		52		73		51	

N. Midland Group.

	Derby		Lichfield		Leicester		Lincoln	
	A	B	A	B	A	B	A	B
April—June, 1906	311	160	502	149	253	59	144	42
July—Sept. „	419	245	474	197	296	92	138	35
Total	730	405	976	346	549	151	282	77
Per cent. rejected	45		65		71		73	

REPORT ON THE SURGICAL WORK, ROYAL HERBERT HOSPITAL, WOOLWICH, FOR 1906.

BY MAJOR M. P. C. HOLT, D.S.O.
Royal Army Medical Corps.

DURING the year 170 classified as major operations and 115 minor (excluding those for venereal ailments) operations were performed under general or local anæsthesia.

The operations performed included the following :—

48 radical cures of hernia.	1 operation for aneurysmal varix in head (traumatic).
12 " " varicose veins.	1 repair of hard palate for syphilitic perforation.
3 " " varicocele.	3 enucleations (traumatism, 2; glaucoma, 1).
3 " " hydrocele.	1 dissection of Dupuytren's contraction.
2 operations for prolapse of rectum.	2 arthrotomy—
3 " " hæmorrhoids.	For chronic rheumatic knee-joint, 1.
1 " " fistula in ano.	" gonorrhœal " 1.
3 dilatations of urethral stricture.	1 plastic repair of eyelid.
1 large ischio-rectal abscess extending along the bladder.	1 suture of 3 tendons of wrist.
3 wiring fractured patella.	2 operations for strabismus.
1 " " femur.	2 gastro-enterostomies (dilated stomach, 1; ulcer stomach, 1).
1 " " metacarpal bone.	1 exploratory laparotomy for injury.
1 " " clavicle.	1 laparotomy for acute intestinal obstruction by band.
1 " dislocation of acromio-clavicular joint.	1 laparotomy for acute intestinal obstruction, internal hernia (died).
1 operation for fracture of cervical vertebrae.	5 appendix abscess.
Removal of foreign bodies—	10 appendicectomy in interval between attacks.
1 fragment of shell.	2 abscess of liver.
1 " bullet.	5 for hammer-toe.
1 small shot (9).	3 complete mastoid operation.
1 removal of part of fractured head of radius.	1 for maxillary antrum disease.
3 trephining for fracture of skull.	For tubercular disease—
2 operations for osteo-arthritis big toe.	1 testis - castration.
3 " hallux valgus (one double).	1 epididymis.
2 removal loose cartilage in knee-joint.	2 glands in neck.
Malignant new growths—	Of the minor operations—
1 sarcoma in axilla.	23 abscess opened.
1 " of sphenoid and both jaws and lymph glands.	9 aspiration of knee-joint for effusion.
1 " of testis.	19 for onychia.
1 " of tonsil and lymphatic glands.	7 for stricture of urethra.
1 " in neck (recurrence).	2 iridectomy.
1 " of toe and lymph glands.	1 advancement for squint.
1 carcinoma, stomach, partial gastrectomy.	1 lumbar puncture.
1 " " gastroenterostomy (died).	3 amputation of finger.
1 " pancreas (died).	3 " toe
1 " in neck (recurrence).	2 exploration for liver abscess (negative), &c., &c.
1 operation for aneurysmal varix in axilla (traumatic).	

Local anæsthesia under eucaïne and adrenalin, or under cocaine, when used gave fairly satisfactory results. Considerable practice is necessary to ensure reasonable success, but it has been noted that though satisfactory analgesia may be obtained, there may also follow a period of considerable neurotic excitement, which is somewhat undesirable.

A trained masseur was again continuously employed throughout the year, and the results both in surgical and medical cases would seem to fully justify this course, the amount of manual labour exacted of him being generally sufficient to take up his whole duty time.

Operations for cure of hernia. In most instances the combined methods of Kocher and Bassini are made use of, but occasionally only the method of Bassini is feasible; these methods give excellent results, as no cases of recurrence after operation performed during the past two years have been traced. But operation was performed in five instances of recurrence after operation for cure performed elsewhere; the recurrence in these cases was four years after operation in one, three years in two, one year in one, and three months in another; one case was unable to say how soon after the previous operation the hernia had recurred—he had been operated on in childhood. Only one case calls for special notice; in this the recurrence took the form of a large swelling extending right across the front of the thigh, under Poupart's ligament, after a previous operation for inguinal hernia; a very extensive suturing of Poupart's ligament to all the underlying structures was necessary, and obtained a successful result, but was complicated by a temporary attack of phlebitis limited to the leg. One case of femoral and one case of ventral hernia came under operation, the latter being in the scar of an old operation for appendix abscess.

Other cases calling for notice were: One fatal case of repeated gastric hæmorrhage with symptoms of peritonism in a woman; she was already in a desperate condition when first reported to the military medical officer, having been under the care of a local medical practitioner.

A case of intestinal obstruction due to internal (duodeno-jejunal) hernia was fatal; he came to hospital with acute pneumonia and within a few hours signs of intestinal obstruction became evident. At the necropsy advanced pneumonia was present on the right side, though the operation had readily released the extensive internal hernia; there were no signs of peritonitis present; he died sixteen hours after the operation.

One case of gastro-enterostomy for carcinoma of the stomach with complete closure of the pylorus was fatal; unfortunately he was not induced to submit to operation till practically *in extremis*, though he had been urgently advised that it was the only hope of relief for as long as six months before he would give consent. One other case of stomach cancer accepted operation, the pyloric half of the stomach was removed and a gastro-enterostomy performed; he is at present well, free from symptoms, and is putting on weight.¹

The exploratory laparotomy for injury was performed in the case of a non-commissioned officer who was rolled on by his horse. Subsequently to this injury he began to suffer from constant abdominal pain and dragging, and then chronic constipation followed. At the operation the sigmoid flexure was found bound down to the abdominal wall by a mass of adhesions; these were divided, and recovery was quite uneventful.

The laparotomy for intestinal obstruction by a band was done for acute obstruction arising some weeks after an appendix abscess had been successfully drained. At the operation a knuckle of gut about 14 inches long was acutely strangulated by a thick fleshy adhesion; this was removed, and recovery was uneventful.

Of the fractured patella cases, one was an old fracture of some two years duration, one was of six weeks duration, and one was a quite recent compound septic fracture; all three were successful with freely movable knee-joint.

It is very obvious that sarcomatous disease is very much more frequent of later years; in three of the cases where recurrence resulted Coley's fluid was energetically used, and in all of them the recurrence definitely subsided, but the cases are too recent to justify a definite report of cure; a fourth case, one of irremovable growth in the sphenoid bone, both jaws, and lymph glands on both sides of the neck, has been put under Coley's fluid treatment, the growths as far as anatomically feasible having been removed. This case is still under treatment, and together with the previously mentioned three cases will form the subject of further report as soon as sufficient time has elapsed.

The three cases of trephining for fracture of skull were all old injuries; in each case persistent, severe neuralgic pains were the cause of seeking relief, and in each case prompt and complete relief from pain was obtained and all returned to duty.

¹ This man has now, August, 1907, returned to duty quite well, and weighing some 3 stone more than before the operation

The case of aneurysmal varix in the head¹ was one where a horse had kicked the patient on the left side of the head some eight months previously; then, subsequently to the injury followed intense buzzing, throbbing noise in the left side of the head, together with complete blindness from glaucoma of the left eye; for the former symptom ligature of the common carotid artery was quite successful, whilst enucleation was done for the glaucomatous globe; it remains a matter for speculation where was the site of the aneurysm.

Contrary to the teaching of many authorities, repair of the palate for extensive syphilitic perforation was completely successful.

In this hospital only aseptic, as distinct from antiseptic, methods are employed for both aseptic operation wounds and for septic injuries: the success of the method is unvaried.

ANÆSTHETICS.

The medical officers of the entire station take the anæsthetist's duty for a month at a time in turn. In this way every officer has an opportunity of retaining his skill, or if imperfectly skilled, of attaining some experience, in this very important duty—one that any medical officer may be called upon to fulfil absolutely imperatively and without previous notice. Where there is previous knowledge each medical officer is allowed to select his own method, provided only that he feels reasonable confidence and there be no surgical reason excluding the use of any given anæsthetic. Ether was used for 33 cases, chloroform for 115 cases, ether and chloroform combined for 16 cases, local anæsthesia for 5 cases, gas and chloroform for 1 case, and gas and ether some 15 times, included under ether cases in major operations; whereas in minor operation cases the anæsthesia was produced as follows: CHCl_3 52 times, gas 21 times, ether 10 times, ether and CHCl_3 4 times, ether and gas 3 times; local anæsthesia was used as follows: ethyl chloride 8 times, eucaine 8 times, cocaine 3 times.

This wide diversity of methods is accounted for by the individual previous experience and competence of the various medical officers called upon to anæsthetise; the preponderance of cases where chloroform is used, though this is at variance with civil practice, is well accounted for and not to be discouraged, since CHCl_3 is the only general anæsthetic commonly practicable in the Tropics. At the same time the large number of administrations does away with any complaint that medical officers in the Service have not

¹ This case was reported in full in a recent number of the *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS* by Captain Matthews.

sufficient opportunity for becoming fairly conversant with anæsthetics. Notwithstanding this, the widest possible difference in skill is observed in the various individuals.

X-RAYS.

Five hundred and eighty-five exposures were made during the year, in addition to a certain amount of screen work. This large number does not represent the total number of successful plates, for two causes contributed to a considerable wastage of plates: (1) inferior or fogged plates; (2) inexperience of the individual operator. A specially trained man was sent to the hospital, but his first efforts were completely futile, and it took some months time and a considerable expenditure of plates before he began to produce really creditable results; unfortunately his turn came for foreign service, and he has been replaced by another specially trained man, whose efforts at first were not such as could be shown to a scientific society, but are much better now.

Several cases were photographed to verify a positive or negative diagnosis of renal calculus. It is here probably more than anywhere else that fogged and inferior plates are of absolutely no value, and represent only so much waste of time; and in some cases as many as six plates had to be used before any attempt at an opinion could be given. Eight cases were examined for suspected calculus; in only two was a positive diagnosis given. Fifty-two cases of fracture were photographed; and in 42 cases a definite negative opinion was given where fracture, dislocation, foreign body or bone disease had been suspected. In 5 cases foreign bodies (not projectiles) were located within the body; 4 cases of old gunshot wounds were examined and showed the presence of bullets, pellets, or pieces of shell. Six cases of dislocation of joint, 2 of separation of epiphysis, 4 of rheumatic arthritis, and 1 of ankylosis of wrist joint, were the chief affections of joints. Other cases of interest were: mediastinal tubercular glands 1, thoracic aneurysm 3, fracture of cervical vertebræ 1, tumours of bone 9, gumma of bone 2, ditto of skull 1, abscess of lung 1, dilated stomach 1, hypertrophy of heart and caries of spine 1, stricture of œsophagus and traumatic epiphysis 1, &c. The complete list evidently includes an amount of work of the greatest interest, importance, and of educational value for all officers.

The apparatus in use is not elaborate, and for the most part is what is known as field equipment; some of it is not quite up to date and is not to be compared with the more elaborate and accurate apparatus to be found in civil hospitals, but still, on the whole, produces generally very fair results.

THE TEETH OF THE SOLDIER.

BY MAJOR H. A. BRAY.

Royal Army Medical Corps.

WITH reference to the able article on this subject which appeared in the February number of the Journal, there are a few points which it is well should not pass without comment, as they appear to minimise the importance to the soldier of having sound teeth.

(1) The statement that "persons suffering from diseased teeth continue to swallow an emulsion of pus and germs with their ferments for practically the whole of their lives, as a general rule without any consequent ill-effect on their health," would probably be better expressed by saying that a certain number apparently did so without any obvious ill-effect.

Hunter, who has devoted much attention to this subject, states in his work on "Oral Sepsis" that this swallowing of the secretions of a septic mouth are a constantly overlooked and yet common source of numerous diseases, both local and general; he calls special attention to its gastric effects.

(2) "Bad teeth do not cause poor physique and impaired constitution." This is rather doubtful; that bad teeth are adjuvant causes of bad physique and impaired constitution is undoubted; the dental caries and impaired constitution act and react on one another, but there is this point which should not be overlooked, that until the caries has progressed sufficiently far to have gone through the enamel and to have affected the dentine the resisting power of the constitution does not come into play, the enamel being a lifeless body. That men of fine physique often possess a very diseased set of teeth is true, but it is equally true that more often they do not.

(3) As regards the 400 toothless or partially toothless men of long service examined in the Northern Command, the notes as to their robustness would have been more interesting, as we are considering the teeth of soldiers, if they had been taken after a few weeks' active service on "bully beef" and biscuit ration. I have a shrewd idea that all the men with plates and those with no opposing molars would have been found in remount depôts, hospitals, &c., in fact, in places where they had lots of time to make "stews" of their rations. Their statements that their teeth

had disappeared without pain should be taken with much salt. It is, I believe, extremely rare for caries of sufficient extent to destroy a tooth to occur without pain, but there is nothing more quickly forgotten than a toothache. Although medical history sheets would show the sickness sufficiently serious to warrant admission to hospital, they would not show the number of sleepless nights, the result of toothache, the may-be resulting "falling out" on the next day's march, nor the possible "asleep on his post when a sentry," this latter the natural result, when the swelling had come and the pain had subsided, of the previous sleepless nights; nor would the medical history sheets show whether these men had been actually at the front or on employments on the lines of communication or at the base, simply because they could not eat their rations.

(4) It is stated "that stumps, even diseased ones, help in mastication," but a stump (*i.e.*, a root flush with the gum) is a hollow tube of septic matter, and is more liable to be a source of septic infection than an aid to mastication; the hardened gum after extraction is just as useful, in fact, often more useful, as it is not tender to bite on, whereas many stumps are so. A carious tooth, with the caries affecting the sides and not the crown, may be useful for mastication, but its usefulness and the period of its usefulness are much increased by being stopped.

(5) That decayed teeth are universal in the Army is a regrettable fact, but that "they occasion little trouble" is not my experience. That toothache and neuralgia are rare was not my experience last year in Bulford: 191 men reported sick with toothache and neuralgia. These men were two hundred and fifty-five days off duty. These figures do not include men who were under treatment by the dental surgeon. One reason, I believe, why men comparatively seldom report sick is that, as the author states, "they (the teeth), as a rule, are treated by extraction, and no more is thought of the matter." This is exactly what should not occur; numbers of teeth are probably annually extracted in the Army which could have been perfectly well stopped. Men will stand a great deal of pain to avoid extraction, especially when they know that a certain number of teeth having been extracted, they are invalided for loss of teeth. If they knew that their toothache would be relieved, the tooth more or less painlessly stopped in order to carry it over to the next visit to the dental surgeon, and that, if then properly attended to, the tooth might last another five or more years, many more men would report sick.

(6) "In the Army Medical Reports it is not even mentioned." This is because these reports (until recently) were formed from "admissions" to hospital only, and the majority of cases of caries and neuralgia are not admitted to hospital; also, "caries" more often appears under the heading of its results, viz., "Abscess, alveolar" and "inflammation of dental periosteum," and so is liable to be overlooked.

Last year in the two stations, Bulford and Tidworth, with an average strength of 5,064, the average constantly sick from "dental caries," "alveolar abscess," and "inflammation of dental periosteum," has been :—

In hospital	..	..	2.41
Attending hospital	..	..	3.27
Total	..	..	5.68

Whereas the numbers for—

	In Hospital.	Attending Hospital.	Total
Rheumatism were only	.. 2.9	.. 1.21	.. 4.11
Influenza	.. 3.47	.. .57	.. 4.04
Syphilis	.. 5.8	.. —	.. 5.8

So "dental caries" was responsible for more inefficiency than "rheumatism" or "influenza," and for nearly as much as "syphilis."

(7) "The South African War caries has no connection with the ordinary decay in peace time." It is almost certainly the caries of peace time which brought men to unfitness and hospital in the time of stress and war, as it always will do. The statement that the caries was of the nature of an "epidemic" requires considering under two heads, namely, the two factors necessary to produce caries: (a) enamel; (b) acid-forming bacteria.

(a) The enamel is formed in early life, and after its development is practically not a living tissue; neither its chemical nor physical attributes can be altered by constitutional changes on the part of the owner; any alteration is due to the chemical action of acids, hence no constitutional changes affect the liability of the enamel itself to absorption or softening.

(b) I am not aware of any moderate departure from health which will render the normal buccal juices acid. Any increase of bacteria in the mouth, numerically or increased virulence as regards their "acid-forming powers," or "extreme peptonising power," if it occurs, would be due to increased want of cleanliness on service, or to want of resisting power in the mucous membranes covering the gums, &c., and not due to diminished resisting power in the enamel. As a secondary consequence of the recession of the gums,

the result of tartar or scurvy, the teeth do get loosened and the dentine of the root liable to invasion.

An impaired constitution will, however, act this way: The caries having got as far as the dentine, this tissue will fail to throw out any hard, false enamel, as occurs in the natural arrest of caries, and the caries will probably be more rapid. If the teeth are sound at the beginning, no effects of climate or insufficient food, or reduced health from stress of service, will produce caries; they will only aggravate it. I have not noticed this epidemic caries in native troops on service, who started with sound teeth, and served under conditions as disadvantageous as regards food, climate, shelter, &c., as I am informed obtained in South Africa. I think the "epidemic" might be fairly attributed to want of cleanliness, hard food on brittle enamel, pre-existing caries plus the ordinary caries incidence, brought to notice by cold, diet, exposure, and want of early treatment.

I write these remarks for fear that an impression may be left on the minds of readers of the former paper that the evil of dental caries is at present exaggerated, and that, as it does not cause much obvious inefficiency, it may be put aside as a subject not worth notice in the daily routine. A Service paper recently published an extremely incorrect and ill-advised paragraph to that effect. It is a question that is becoming more and more important, there being no doubt that as a nation, in common with other European nations, our teeth are becoming worse. This fact is being recognised by local health bodies, and will probably shortly be officially recognised by Government bodies in charge of the education of the youth of the country. To us as Army officers it is more important than to the civil practitioner. Men who cannot properly chew hard food in times when it is necessary to chew hard food are undoubtedly more liable to gastric and intestinal disturbance, and more liable to diarrhoea, dysentery and enteric.

The proper time to treat a tooth is before there is toothache. This point is always forgotten. The time to treat a soldier's teeth is the first day he is enlisted; periodical examination and treatment, if necessary, should be continued to the day he goes on the Reserve.

Every medical officer should be able to clean a tooth, and temporarily stop a tooth, in order to save it for permanent stopping by the dental surgeon. Stopping cases should be supplied in field panniers.

Extraction should be regarded in the same light as an amputation, and only resorted to when other means have failed.

A possible and probable explanation of the increase of caries in the white race is the combination of soft food and want of cleanliness; in my experience the more savage the nation the more care they take of the teeth. Tooth-brushes are issued to soldiers, but a very large percentage do not use them; this is due partly to laziness, and partly to the fact that, having one or more carious teeth, the use of the brush is painful, especially in cold weather; also partly to the fact that there is no mug convenient at the wash-house. Some men use their tooth-brushes to clean their buttons. Also, there is an erroneous idea prevalent that it is no use cleaning the teeth unless with tooth powder; this is perhaps deduced from button-cleaning experience. Having dirty teeth should be considered as bad an offence as being dirty on parade.

The very common refusal on the part of the soldier to allow the dental surgeon to treat his mouth is largely due to ignorance as to what can be done to improve his mouth, but also largely due to the fact that nowadays it seems that a soldier has a right to refuse treatment, and he is very pleased to exercise this "right"; the exercise of this "right" should, I think, include the right of his superiors to refuse him his proficiency pay for inefficiency.

Old officers and old soldiers will state that thirty years ago there was no necessity for dentists, and that if a man could not eat his food he could always make a stew. Nowadays war is often conducted on somewhat different lines; a column may be taken out and forbidden to light fires, perhaps for one night, perhaps for two nights; where, then, is the opportunity to make a stew? In the long service days the average physique was better, the amount of dental caries less, and the actual active caries proportionate to strength was less, as caries is most active in early adult life.

The following figures are of interest: In an examination of 51 skulls of North-West American Indians only two were found to have had caries. An examination of 10,500 school children (average age 10 years) of the lower orders, showed 37,000 decayed teeth; in 86 per cent. of the mouths caries was present. In 500 boys in schools (average age 13 years), 701 permanent teeth had been lost, and of the remaining teeth 3,521 were carious; in 87 per cent. of the mouths caries was present.

I would also point out that, in my opinion, the proportion of dental surgeons at present employed is quite inadequate for the amount of work which requires doing.

ANTI-PLAGUE MEASURES IN RAWAL PINDI, PUNJAUB,
INDIA (BASED ON THE DESTRUCTION OF RATS AND
RAT-FLEAS).

BY CAPTAIN B. B. BURKE.
Royal Army Medical Corps.

ALTHOUGH officers of the Royal Army Medical Corps are not often called upon to organise measures for dealing with an epidemic of plague in a large cantonment, still, at any time of their service they may be required to do so, especially senior officers performing the duties of Senior Medical Officer and, *ipso facto*, Sanitary Officer of cantonments. For this reason the following account of how measures were organised and carried out successfully in one of our largest cantonments may be of interest, and, I trust, also of service to my brother officers of all ranks. The lines on which the measures were organised may be briefly summed up as follows: *Isolation, Segregation, Disinfection, Flea-destruction, and Rat-destruction.*

On the subject of the *Isolation of Plague cases* and the *Segregation of their "contacts"* I will say little, as they are ordinary common sense sanitary measures, and, as such, familiar to all. Briefly, camps were established in suitable spots for actual plague cases and segregation camps for "contacts."

Disinfection of plague infected houses was, in the first instance, carried out by means of heat applied by the "Jullunder" pattern desiccating stoves. These stoves are designed for burning cow-dung cakes, and are capable of raising the temperature of the floor and walls of a room to 160° F.; this having been done, a solution of perchloride of mercury, 1 in 500, was freely applied to the floors and walls. Clothing, &c., was either exposed to the sun for twelve hours, boiled, or treated with perchloride solution.

Flea-destruction.—In spite of disinfection on these lines being thoroughly and carefully carried out, fresh cases occurred on the re-occupation of the houses. (I may mention that, concurrently with this disinfection, a vigorous campaign was being carried on against rats, of which more later.) This recurrence of cases was most disappointing. I knew, from Liston's work, that the principal way in which plague was spread was from infected rats, probably through the agency of the rat-flea. We were, however, destroying the rats, and I thought that no flea would survive the combined effects of 160° F. and 1 in 500 perchloride of mercury. While pondering over this and endeavouring to solve the problem as to why these cases recurred, my attention was drawn by Lieutenant-General Sir O'Moore Creagh, V.C., to a pamphlet published by the Imperial Entomologist entitled "The Destruction of Fleas by

Insecticides." The problem was solved at once as the following extracts from this most valuable pamphlet will show.

"Adult fleas are sucking animals and take their food in a liquid form. Poisons, such as arsenic, which act on the stomach, are clearly useless against such an insect unless put into the liquid food, which is impossible, and, as in the case of all sucking insects, the use of a 'contact poison' is necessary—one that will kill the insect on coming into contact with the skin. The flea is covered with chitin, a hard substance peculiarly resistant to chemicals, and which is not acted upon by any substance generally applicable. There is but one way in which such an insect as a flea can be attacked, and that is by using a substance that will affect the breathing system; this opens at the sides of the body in minute air-holes, and it is known that some substances will kill insects through these openings. The absolute destruction of fleas can be generally effected best by thoroughly washing the floors and walls with a suitable insecticide, the best insecticide being crude oil emulsion."

This emulsion was prepared by the advice of the Imperial Entomologist and is the best available contact insecticide known. It consists of 80 per cent. crude oil with 20 per cent. of whale oil soap; it is a jelly, mixing freely with water, and is commonly used at 3 per cent. solution. At 10 per cent. it destroys fleas in any form, with perfect certainty. A room thoroughly washed with such an emulsion is freed from all insect life, and the emulsion can be applied with perfect safety, with no risk of fire, with great cheapness, and can afterwards be washed out of the floor with water.

A consultation with Major Waller, the Cantonment Magistrate, resulted in a telegram being sent to the Imperial Entomologist asking where "crude oil emulsion" could be obtained, and the eventual ordering of a large supply. At the same time a suitable syringe was selected and ordered on approval. The syringe, "Robins' Hydronette," proved satisfactory, and the emulsion arriving, operations were commenced.

The "crude oil emulsion" fulfilled all that was claimed for it, but practical experience showed that a primary rubbing up with warm water considerably helped the rapid preparation of the 10 per cent. solution, and it was also found that, when the disinfecting gang were trained how to use the "Hydronettes," with one gallon of the solution, a room 12 feet by 12 feet could be thoroughly treated in five minutes. From this time onwards the only method of what may still be called "disinfection" was, first, application of heat, and subsequently treating the room with the "emulsion." Later on,

however, the "Jullunder" stoves being slow and cumbersome and a large number of houses requiring disinfection, I determined to ignore the possibility of a saprophytic existence for the plague germ and to simply attack the rat-flea, at the same time continuing the vigorous campaign against the rat. The results have amply justified my decision, and in not a single instance has a case of plague recurred in a house previously treated with the emulsion, even although many of the houses were allowed to be re-occupied the following day.



FIG. 1.—Disinfecting gang at work in the Suddar Bazaar. Treating rooms with "crude oil emulsion."

Rat-destruction.—It had been decided early in the epidemic to start a vigorous campaign against rats. A poison called "muschi-cide" was selected, many obvious advantages being claimed for it; one was that rats killed by it gave off little or no smell (this I proved to my entire satisfaction), and, moreover, its being the patent of a local chemist, Juggat Singh, it was thought that less opposition would be met to its use in the bazaars where he was well known. This chemist has now got the monopoly for supplying this poison to the Punjab Plague Disinfecting Depôt, Jullundur. It was found possible, with a gang of twenty-five coolies, when each man had been taught his own particular job in the manufacture of the rat-baits, to make from a hundred to one hundred and twenty thousand

baits daily. The cantonment was divided into areas, inhabitants in an area warned, and one area baited daily until every square yard in the cantonment had been baited. This sounds simple on paper, but the amount of labour it entailed and the tact and discretion required in bazaars with a heterogenous population of Hindus, Jains, &c., whose religious views forbid them to take life in any form, can only be estimated by those who have carried the work out. Trapping rats has been, and is being, carried out on a large scale. Smear preparations are made from the spleens of all rats captured and examined microscopically for the plague bacillus, the houses in which any plague-infected rats are found being treated with "crude oil emulsion."

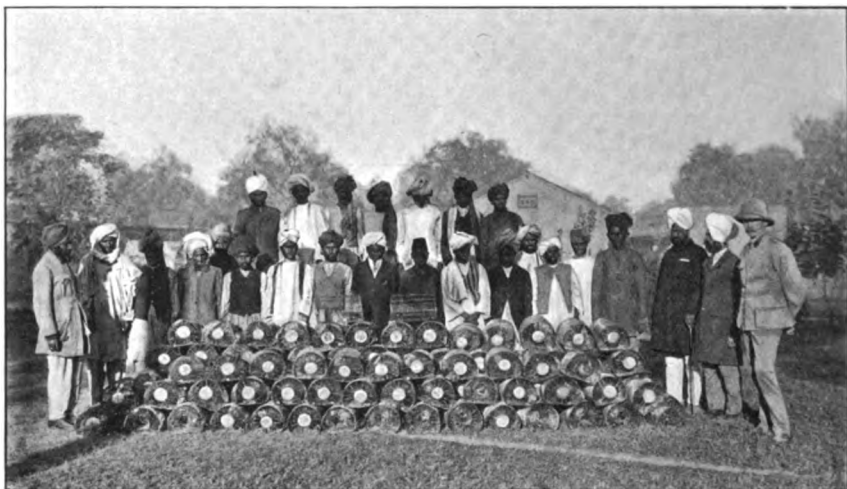


FIG. 2.—Baited rat-traps piled up ready to be taken away and distributed.

As I write this (November, 1906) we are now in the pleasing position of having had no plague cases in cantonments for twenty-two days, while half a mile away, in the Rawal Pindi city, twenty to thirty deaths are occurring daily. In view of these results I am strongly of opinion that in future any anti-plague measures, whether for protection or prevention, that are not principally based on rat and rat-flea destruction will entirely fall short of the object aimed at.

In conclusion, I need hardly say that the results obtained in cantonments could not have been achieved without the cordial help and sympathy on the part of the General Officer Commanding, Lieutenant-General Sir O'Moore Creagh, V.C., and the staunch support of the Senior Medical Officer, Lieutenant-Colonel F. H. Treherne, R.A.M.C.

Clinical and other Notes.

A PRACTICAL EXPERIENCE OF BUBONIC PLAGUE.

It was the close of a hot October day in Mhow, Central India. The *élite* of this purely military station were conversing pleasantly on the Gymkhana cricket ground—the ladies imbibing the usual and hackneyed Indian refreshments with the sobered Indian palate, and the men regaling themselves with stronger beverages and a quiet cheroot. It was the occasion of the final match in the Mhow local cricket tournament, and I found myself playing in a keen and exciting struggle for the Challenge Cup. The Royal Army Medical Corps had been much below strength, owing to an almost entire change of garrison, and the necessary provision of medical officers for troop-train duty had so much reduced us that I found myself the only executive officer besides my Senior Medical Officer, and to increase difficulties still further my examination for captaincy was due, necessitating five hours' hard study for a few days in a close schoolroom; this, taken in conjunction with the Staff-Surgeon, Section and Followers' Hospital, brought home forcibly to my mind that my 446 rupees per mensem were well earned. Relief at last came to the weary but energetic subaltern, and on the hot October day afore-said, the enjoyment of one of my favourite sports, the pleasant pastime of cricket, was mine; others would pay my evening visit. "The common round, the daily task" was left to them. But what had been the cost of my strenuous week from a physical and health point of view? The health pendulum of bodily equipoise was swinging sluggishly—I was "below par." *Corpus sanum* was mine no more. However, five days would see me on two months' leave to Burma, where the joys of shooting would be mine; so what cared I?

"Man proposes, God disposes," Nature asserted herself, and my right forefinger had got painful, all work and movement with the right hand caused a faintly perceptible twinge of pain, and a suspicion of fulness over the knuckles convinced my unwilling mind that some septic germ was battling with the lymphocytes of my blood. An acutely painful white speck was visible on the back of the tissues covering my first indical phalanx; however, I played cricket knowing I should pay in full for my indiscretion. I was lucky and made a fair score, the finger throbbing violently at every stroke. The game was over, and my hand was swollen to twice its size. Showing my injured "paw" to a brother officer, whose verbal treatment was prompt, we rode to the Section Hospital where the finger was cut with a bistoury and a nasty firm bag of pus found near the bone; a hot fomentation was applied and I went to my bungalow, the pain being excruciating and continuous. One-third

of a grain of morphia was administered to me that night. The next day being Sunday, leave of absence from duty was obtained and I rested in bed. "Sufficient unto the day is the evil thereof." Monday followed, as day succeedeth day. It was October 15th—a memorable and never-to-be-forgotten date for me—8.30 a.m. found me at my duties in the Station Hospital; not onerous, certainly. In my ambulatory progression my right groin gave me the impression of stiffness and slight pain in unison with the swing of my leg. Out of curiosity I examined my thigh. Yes, the femoral gland a clear two inches below Poupart's ligament, well away from the groin, was enlarged to the size of a walnut, very soft and exceedingly tender to touch.

To retrogress. Plague was rife in Mhow, and even in the "sahib's" bungalows themselves many dead rats had been found, and officers' servants were constantly dying of the dread disease. The bazaar, once crowded and clamorous, was desolate and dreary, and much difficulty was being experienced in obtaining necessary trifles and commodities owing to its desertion and ensuing stoppage of work; tents were dotted indiscriminately along the roads—in fact, the native population were in a condition of "funk." My abode was in a club bungalow in the early days of October; my bearer, when arousing me from the land of Nod, placing my *chota hazri* on the bedside table, conveyed the rather gruesome and nauseating intelligence that a dead rat had been found in my bathroom; this vermin I got removed and burnt, and from that day never walked about my bungalow except with some covering to the feet. A few days later another rat was discovered between the washstand and the wall, quite dead. How it got there is a story from another world, the paradise for dead rats. Further, a putrefying smell pervaded the bathroom and another and third dead rat was discovered amongst the tiles on the roof.

My duties as Staff-Surgeon necessitated my seeing and touching many plague cases amongst the military followers, a few of whom contracted the disease daily. Having given a diatribe of some length regarding the conditions of plague locally, we will return to our "muttons" as the saying is: at that momentous minute the discovery of my enlarged femoral gland. I felt it; the nerves of my hand communicated with my brain with the swiftness of "greased" lightning, and a swift diagnosis was made. At the same time came conviction as sure and stable as that which forced Julius Cæsar to exclaim, "Et tu, Brute." I had got bubonic plague; this much was certain. Another thought fashioned in my brain as the other evaporated. Should I recover? This fantastic reality did not remain a moment—immediate action was my goal. I must make others believe I had this fatal disease, which would be naturally difficult at first. A British officer with plague was a *rara avis*, and the human mind is slightly biassed, to put it mildly. Prompt treatment with curative serum was, perhaps, my only

chance of life. I saw a brother subaltern and expressed to him my awful conviction; he seemed concerned at first, impressed, no doubt, by my decided tone, felt the gland and, observing no constitutional symptoms, calmly said: "Oh, you must have strained yourself at cricket." Feeling somewhat annoyed at this, I walked quietly into the Senior Medical Officer's office and explained to my Commanding Officer that I was under the impression I was suffering from bubonic plague. My temperature was therefore taken; it registered 98° F. A suggestion was made that a small sore on my foot or leg was the seat and origin of the trouble; only a few bruises over the skin were found. Leaving the hospital in rather a dilemma, I sat down to breakfast at the Club of Central India with a curious sense of impending calamity. True, I had no other symptoms but a tender and enlarged femoral gland, but a vague sense of weakness was creeping over me as I played with my food at the breakfast table. In the course of conversation I casually mentioned the discovery of the tender gland, merely saying, "Had it been in anyone else I should have certainly diagnosed plague at once." My conviction was, of course, ridiculed and pooh-poohed; the subject was dropped and I left for the Followers' Hospital, over which I had medical charge. Here, having explained my symptoms to the hospital assistant, he took my temperature and found it 99·8° F., but said he did not think it was plague. I did my work at the hospital, but feeling too ill to ride my bicycle back to the bungalow, hired a "tonga," at the same time telling the hospital assistant to ask the Cantonment Medical Officer to visit me as soon as possible. Reaching the bungalow, I undressed and got into bed. My temperature was 101° F., and there was a distinct feeling of malaise and severe headache, and the gland was painful to touch. An hour later I felt much worse, and my temperature must have risen a good deal higher. The tongue and lips were quite dry, like leather; my feelings were subdued, and realising the condition I was in, one desire was uppermost in my mind—that plague should be diagnosed at once, in order that proper treatment might be adopted. The Cantonment Medical Officer visited me that morning; I saw he took a serious view of the case. Several of my brother officers visited me as well; a diagnosis of plague was not definitely made, although grave suspicions were entertained, but in my presence a most hopeful view was taken. Quinine injections were ordered. My eyes became inflamed and watery, still further adding to the perfect picture of plague. At about 1 p.m., an officer living in my bungalow passed my room, and seeing me in bed looked in, exclaiming, "Hullo, what's the matter?" "I've got bubonic plague," was the quiet rejoinder. His remarks on my answer rather kindled my ire. I verily believe if he had come near me I would have talked to him like a father. This only illustrates the gross ignorance of lay minds with their rapid diagnosis, who, nowadays, in these enlightened times,

fancy their medical knowledge extremely, giving forth and expressing their opinions about medical matters with the greatest confidence.

The headache increased in severity during the afternoon. My temperature being 104° F. A medical officer, with great kindness, slept on the verandah of my bungalow all night. I passed a very restless night, and early in the morning was seized with vomiting, bringing up large quantities of bile. A dhoolie was dispatched from the section hospital, where I arrived early in the morning. Plague was now definitely diagnosed, and two injections of Yersin's curative plague serum administered, and I was conveyed to a tent in the hospital compound. A further injection of serum was given that evening. My condition that afternoon was critical, the temperature was 105° F. and pulse 126. I rambled slightly in my speech. Nourishment was freely given and taken well. The temperature reached 106° F. during the night, and sponging was constantly resorted to without much effect; calomel had been freely administered to me prior to this, and the bedpan was in constant use.

On October 17th, my temperature kept very high; cardiac stimulants were given lavishly, and brandy in large quantities. There was considerable dilatation of the heart; the beat was wavy over a large area of the chest-wall. On auscultation reduplication of the second sound was well-marked.

My temperature fell during the night of the 17th, and on the morning of the 18th, the day of my now exploded leave to Burma, 98·8° F. was the registered temperature. That day and next I had fever to the extent of 100° F. at night; vomiting was constant, large quantities of green bilious fluid being brought up; alcohol, especially brandy, always carried sickness in its train.

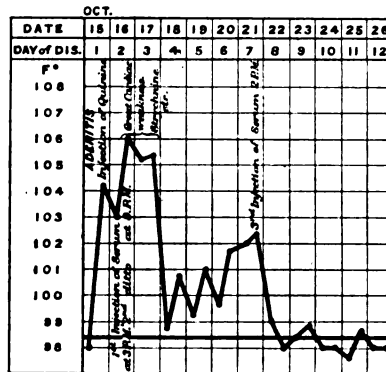
On the evening of the 20th my temperature rose to 102° F., and remained at that height all next day. It was decided that more of Yersin's plague serum should be administered, and an injection was made into the right upper arm.

My fever subsided on the 22nd, and there has been practically no temperature since.

Through the whole course of my disease the adenitis of my thigh increased, and there was slight mottled redness and softening over the gland, which gave considerable pain, and was exquisitely tender to touch.

On the third day of illness a culture was taken by puncture from the gland and the typical Kitasato-Yersin plague bacteria found in large quantities. Hot fomentations were applied during the whole course of the disease. Another gland was quite distinct in the right groin, just above the femoral gland; this gave no pain, but grew to a considerable size. Shortly after, a small tender gland was felt in my left groin, and under the left axilla a bunch of glands were distinct and slightly painful; with reference to these, my left axillary glands were always palpable after my second vaccination, but had never been so tender or swollen as

now. The softening and redness of the femoral gland increasing, fever being absent for five days, an incision of approximately one inch was made into the centre of the softened area; the gland was found necrotic and protruded through the incision, and a plentiful, evil-smelling, brownish discharge soaked the dressings. The pain on movement was intense, filaments of nerves being exposed in the gland substance; cocaine gave immediate but temporary relief, but rest at night was much interfered with. Later, pure carbolic acid was applied, both to the surface and interior of the gland, with marked success, the pain vanishing rapidly illustrating its nervous character. A white slough has formed in the middle of the gland, which is pushing its way towards the surface, and there is much diminution in the size of the gland itself.



To put the symptoms in a more concise, tabulated and classified form:—

Sudden Onset.—A slightly enlarged soft and tender femoral gland before any constitutional and prodromal symptoms. Then within a few hours after observation:—

Acute Toxæmia.—Rapid increase of temperature, dry, furred tongue, sordes on lips. Watery effusion with smarting of the conjunctivæ. Great lassitude and nervous prostration, and these within three hours after discovery of the gland.

Severe Frontal Headache.—This was most acute, and after interrogation was my first and chief complaint.

Hyperpyrexia.—Reaching to over 106° F.; cold sponging had little effect on this, unless carried to extreme, causing shivering and partial collapse.

Frontal Headache.—This I describe as excruciating; the icebag and evaporating lotions had no effect on it.

Lumbar Pain.—The remarks opposite "headache" are similarly applicable to this; it necessitated my turning from side to side, as lying on the back was unbearable. A belladonna plaster gave much relief.

Extreme Prostration.—But slight stupor, no delirium or condition of the "typhoid state." I believe there was incoherency and rambling in my speech.

Cardiac Weakness.—The striking effect of the plague toxins on the cardiac nerves and muscles was well exemplified in my case. The pulse became rapid and very feeble,

causing much anxiety on the second day of the disease, and the condition of my heart has been referred to before.

Sleeplessness.—Was present throughout. Morphia was naturally given with great caution, and then only in small doses of grains $\frac{1}{4}$.

Fetor of Breath.—Was well marked; the face was red and bloated, with a few small pustules scattered over both cheeks. The conjunctivæ were injected.

A distressing and prolonged symptom was *Instability of the Nervous Centres.*—When asleep, or even on closure of the lids, a rapid succession of thoughts and fancies passed before me and scenes and pictures moved before my eyes with automatic rapidity and clear delineation, irretrievably fixing themselves on my memory.

My condition at the time of writing, with a temperature which has been normal for fourteen days, is one of great weakness, and there is considerable wasting of all my muscles; slight exertion, or smoking a cigarette, causes perceptible cardiac anxiety, but this latter is improving daily. A few petechiæ, the size of a millet seed, are observable on my feet; there is still some discharge from the gland, which is diminishing in size. A smear was taken yesterday from the glandular discharge; several varieties of pus organisms were found, but no plague bacilli. An interesting and important after-complication is phlebitis of the right internal saphenous vein, which is situate just to the left of the necrotic gland; in fact, the gland itself apparently surrounds it. There is a little swelling of the corresponding thigh and leg, and tenderness on pressure over the course of the vein; it has induced more lameness of my right leg than would otherwise have been the case.

My temperature has been normal now for twenty-five days. The discharge from the gland has ceased and a small scab has formed over the site of the incision. I am putting on flesh and the inflammation of the internal saphenous vein is better. The heart's action is stronger, its equilibrium is not upset by a slow walk. Indigestion is my great bugbear now. There is also a distaste for food.

The cause of my contracting the disease will remain a mystery, uncertain and vague. The "bomb" was, I think, without doubt in my bungalow, but how seldom is a "sahib" blown up. Dead rats were found, as stated before, I was in a very low state of health, evidence the septic finger, and thirdly, on the memorable cricket day, a severe bruise, from a cricket ball, was present on my right shin; the germ may have obtained ingress here, or, being in the rains, an industrious flea migrating from its late host, one of the dead plague rats, might have been the cause. The curative serum was administered on the afternoon of the second day of my disease, and the temperature fell temporarily on the fourth day; a few days later 102° F. was registered and more serum was given on October 21st. Although there can be no positive proof as to its action in my case, but few could doubt the benefit I derived from it, on the face of such evidence as this. The drop of the fever, in the first instance, after injection, was roughly thirty-six hours, and twelve hours after the second injection. The serum has had highly satisfactory results in this district, although

one hears that the serum treatment of plague in India has proved a failure. Its great expense is an undoubted drawback to universal use; the amount administered to me cost over £3.

Last, but by no means least, as a fitting wind-up to this egotistical discourse, the thought of the great kindness and attention received from my brother officers who looked after me so well, and the skilful nursing bestowed on me, a debt is contracted which will never be sufficiently repaid. My profession, however, gives a better chance of returning their kindness to some other unfortunate beings—I trust never in a like manner to them. I hope those readers of this article who prefer a bald statement of medical facts instead of a storyette will be a little lenient and less critical to the account of one who, naturally, being himself the victim, must find it somewhat morbid and painful. Let the many grammatical errors and the lack of concise and experienced medical knowledge be put down to the effect of the plague toxins on the cerebral centres. I hear rumours of a board, and must say there is a longing for home, a walk down Piccadilly and the scent of the dear old London street.

L. V. T.

FOREIGN BODY IN THE STOMACH.

By MAJOR F. W. BEGBIE.

Royal Army Medical Corps.

PRIVATE T., East Surrey Regiment, was admitted to the Station Hospital, Mhow, Central India, on May 26th, 1907, complaining of inability to swallow his food and of a feeling of suffocation at his meals. He gave a history of having swallowed a fish bone some six months previously, which stuck in his throat, and was only released through the help of a comrade. Since this incident he has suffered at times from the above-mentioned "feeling of suffocation and inability to swallow solids."

With a view of ascertaining whether or not there was a stricture in his œsophagus, I obtained a whalebone probang from the capital case, having a sponge at one end and a coin catcher at the other. I joined together the two pieces of the instrument and tested its bending capacity. I then soaked the sponge in glycerine and standing behind the patient, so as to straighten his œsophagus, proceeded to gently push the instrument towards the stomach. This was accomplished with little difficulty, and I felt the sponge pass the cardiac valve and enter the stomach. I then told the patient that his fears of a stricture of the œsophagus were groundless and proceeded to withdraw the probang, when, to my intense horror, it broke just below the middle silver joint, leaving the sponge end and 7 inches of whalebone inside the patient.

Grasping the seriousness of the situation, preparations were made for instant gastrotomy. An emetic of tinct. sulph. was tried; but I thought

this would fail, as the sponge end would only swell out more. I sent for the Senior Medical Officer, Lieutenant-Colonel S. Westcott, C.M.G., and Captain Hudleston, R.A.M.C., to assist, and in less than an hour after the accident, with the assistance of the Senior Medical Officer, I performed gastrotomy and removed the sponge-end of the probang from the abdominal wound. An incision parallel to the cartilages of the ribs was used, the rectus muscle split so as to make a valvular opening, should such be required, and the stomach drawn into the wound in the usual way.

Patient has made a good recovery up to date, ten days after the operation, and is now eating boiled fish. The probang, on examination of the whalebone of the broken ends, was found to be very dry and brittle, evidently due to the heat of the Indian climate. It has been sent to the War Office, with a view of ultimately finding its way to the new Royal Army Medical Corps Museum at the College, Millbank, to serve as a warning to all future members of the Corps, as to the effects of climate on whalebone.

DISSEMINATION OF ENTERIC FEVER BY MEANS OF THE URINE.

BY COLONEL W. J. RAINSFORD, C.I.E.

Royal Army Medical Corps.

A GOOD deal has been said on the above subject as regards ambulatory cases of enteric fever disseminating the disease in the vicinity of camps and barracks, but I believe I am right in saying that less stress has been laid on the possible, or even probable, spread of the disease by means of cases discharged from hospital "cured." The latter must be my excuse for a few notes on a case of enteric fever in St. George's, Bermuda, that seems to me an instructive one.

Private S., 2nd Hants Regiment, aged 22, was admitted to hospital on November 22nd, 1906. The case was a more or less ordinary one of enteric fever attended with a relapse. He developed spots on the abdomen on or about the tenth day, and had some diarrhoea during the first period of pyrexia, after which his bowels were constipated. Widal's reaction could not be got on admission, but a 1 in 50 + result was obtained the twenty-fourth day of the disease. The temperature became normal on the twentieth day, and remained so up to the thirtieth day, when he had a relapse, which lasted to the forty-sixth day of the disease (January 3rd). During this relapse there were no untoward symptoms, except that his constipation was obstinate and required more or less frequent enemata. From January 4th, 1907, his temperature remained normal, and he was allowed up on January 16th, when he was found to have lost 2 stone $2\frac{1}{2}$ lbs. since admission to hospital.

On February 2nd, 1907, following the plan instituted in Bermuda, of a further period of isolation of enteric fever cases (usually a fortnight) after their discharge from hospital, the patient was given a disinfecting bath and complete change of clothing and was isolated in a tent in the hospital compound, and put on a course of urotropine internally (10 grains t.d.s.).

By February 11th his weight had increased from 7 stone 7½ lbs. to 8 stone 9 lbs., and he looked in excellent health. His bowels were moved naturally by the addition of porridge and stewed apples to his diet.

On February 20th his urine was sent for examination to the Special Sanitary Officer, Lieutenant A. M. Rose, R.A.M.C., who reported the presence of *Bacillus typhosus*, and he was consequently not discharged.

On February 22nd, partly owing to the wet weather at the time, and partly to the fact that the evening temperature had been a few decimal points over normal, he was brought back into hospital, and since that date and up to the time of writing, a weekly examination of the urine has disclosed a similar condition of affairs, *B. typhosus* being present on each occasion. His temperature has often reached 99° F. at night, but he appears and feels well, and his weight is now 9 stone 8 lbs. During the latter period he had two courses of urotropine, which in no way affected the presence of *B. typhosus* in the urine.

Commenting on this case the following points arise :—

(1) If this patient had been discharged from hospital, say on February 15th, instead of being further isolated, a likely enough proceeding in a place where the above isolation system did not prevail, he must needs have been an unsuspected though probable source of infection of the troops for at least three months.

(2) Urotropine administered internally had no effect in getting rid of *B. typhosus* present in the urine.

A report of the result of a sample of urine sent for examination on May 11th has been received giving, "No *B. typhosus* present in urine." The test was made during a course of boric acid given internally, in doses of 10 grains, t.d.s., from May 7th to 23rd. Whether the drug was a factor in the disappearance of the bacillus from the urine is difficult to say, as he had only been taking it for five days, but it seems worthy of further trial. The period during which the two courses of urotropine noted in the report were administered were : from January 26th to February 22nd ; from April 19th to May 6th. In both cases the dose was 10 grains, t.d.s.

The first sample of urine was received on February 22nd, and of this 5 cc. was added to a tube of bile-salt medium, and the tube was incubated at 37° C. for twenty-four hours. At the end of that time a distinct growth was got in the medium with formation of acid and gas. By means of a platinum wire the growth from the bile-salt medium was transferred to a plate of lactose-litmus agar, and after twenty-four hours' incubation a large

number of red colonies and a few blue colonies appeared along the track made by the wire. On microscopical examination the red colonies were found to be composed of short, non-motile rods, which stained by Gram's method. The blue colonies, on the other hand, consisted of short actively motile rods, which did not retain the Gram's stain. An agar tube was then inoculated with a portion of a blue colony and after incubation for twenty-four hours gave the following cultural appearances and reactions:—

Agar.—A dull white growth, greyish by transmitted light, with slightly granular appearance.

Gelatine.—No liquefaction.

Peptone Water.—No indol formed.

Neutral-Red Agar.—Red colonies were got.

Proskauer and Capaldi, I.—No change.

Proskauer and Capaldi, II.—Acid and gas formed.

Mannite Bouillon.—Red colour; no gas formed.

Milk.—Alkaline reaction; no clot.

Litmus Whey.—Slight red colour.

Barsikow's Milk Sugar.—Unaltered.

From the results noted above there is no doubt that the motile organism isolated from this sample of urine was the *B. typhosus*. The samples of urine sent for examination on April 18th, April 25th and May 2nd, were found to contain the bacillus, and to give the same reactions, with the various media employed. In the fifth sample sent on May 11th no typhoid bacilli could be found, and the sixth sample received on May 16th gave similar negative result. The seventh sample received on May 27th also failed to reveal the presence of *B. typhosus*. The non-motile rod referred to was found in normal urine after standing for six hours, but was not found in the same urine when freshly passed. It is, therefore, the result of putrefactive change and has evidently no relation to the presence of the *B. typhosus* in the urine.

Bermuda for a great many years, although possessing otherwise a very healthy climate, has held the unenviable reputation of affording the greatest number of enteric cases per thousand of strength of any station in the British Empire, both as regards the British Army and the Royal Navy.

The marked and extraordinary decrease in this disease amongst the troops that now obtains here dates from the time that I received steam disinfectors and the disease was treated as an infectious one, *i.e.*, since convalescents and suspected ambulatory cases have been segregated and their clothing and bedding carefully disinfected, and I may add, a system adopted by which the interchange of blankets and linen between companies and individuals on change of station has been put a stop to.

Drinking-water in Bermuda is all derived from rain collected on the roofs, and practically each building has its own separate tank. No con-

nection has ever been proved between any one tank and two or more enteric cases.

For many years I have been sceptical as to the water-borne theory of the spread of enteric amongst soldiers. I do not for a moment deny that enteric is and can be spread by water, but I have never in the Service seen an outbreak of enteric in which conclusive evidence of its water-borne origin has been established to my satisfaction. On the other hand, I have time after time noticed cases in which the disease appears to have been communicated in a more direct manner. For instance, the only two cases which have occurred in the Detachment Royal Army Medical Corps, Bermuda, during my stay here (strength about twenty-eight N.C.O.'s and men) have been contracted by orderlies actually nursing enteric cases, in specially isolated wards. About a month ago a lady nurse contracted the disease here while nursing a civilian patient suffering from enteric fever and died of it.

It appears to me almost certain that the strain of enteric met with in semi-tropical climates with a warm, saturated atmosphere, in which the functions of the skin are most active, is a more infectious disease than it is in temperate climates. The point, anyhow, is worthy of serious consideration.

I am indebted to Major G. Mansfield, R.A.M.C., and Lieutenant A. M. Rose, R.A.M.C., Special Sanitary Officer, for the clinical and bacteriological notes of this case.

NOTES ON THE TREATMENT OF GONORRHOEAL ARTHRITIS BY RECTAL INJECTIONS OF ANTISTREPTOCOCCUS SERUM.

BY LIEUTENANT A. DAWSON.
Royal Army Medical Corps.

In a paper read before the Royal Medical and Chirurgical Society in April, 1906, Drs. Soltau Fenwick and Porter Parkinson drew attention to the use of rectal injections of antistreptococcus serum in gonorrhœal affections. Especially were the results good in gonorrhœal arthritis and, as any treatment which would be an improvement on the tedious and unsatisfactory course of the usual case of gonorrhœal arthritis would be extremely useful, it was decided to try the treatment in the Rochester Row Military Hospital. Fortunately, the number of cases of this complication of gonorrhœa is extremely small, being about two per cent. of all cases, so that, even in this hospital, confined as it is to venereal disease, one does not meet many.

Up to the present the treatment has been applied to four cases, a number far too small for one to draw any definite conclusion. Though the results were by no means so brilliant as those described by Fenwick

and Parkinson, they were sufficiently good to justify a more extensive trial of the treatment, and it is with this end in view that these notes are now published.

The serum used was Burroughs, Wellcome and Co.'s polyvalent anti-streptococcus serum, which is derived from a large number of varieties of streptococci. The method of administration of the serum was by rectal injection, a method somewhat novel, but apparently quite efficacious and one causing no discomfort to the patient. A soap and water enema is first given and, about half-an-hour later, when its action has ceased, one slowly injects the serum into the rectum, by means of a syringe and a rubber catheter. The usual dose was 10 cc. of the serum and, in one or two instances, 20 cc.

In each of three cases a subcutaneous injection was given, but though two of the doses seemed to give more marked relief than the rectal injection, the local reaction, in spite of antiseptic precautions, was sufficient to cause some mental worry to the patients.

The authors of the article referred to say that the urethral discharge cleared up under the injection treatment, but in none of our cases has this been so. The discharge was found to persist, to a greater or less extent, and microscopical examination on various occasions revealed the Gram-positive gonococcus.

However, in two of the cases irrigation with silver nitrate, 2 grains to 1 pint of water, as soon as the patient was able to get up, led to the disappearance of the discharge in a few days, leading one to think that the gonococci were in a less active condition than usual.

Fenwick and Parkinson suggest that this method of treatment might be useful in gonorrhœal ophthalmia, but it had apparently little effect on two cases treated by Lieutenant H. E. Gotelee, R.A.M.C., when ophthalmic house-surgeon in St. Thomas's Hospital.

The following is a summary of the notes on these two cases, kindly lent me by Lieutenant Gotelee. One case was that of a girl, aged 9, the other a woman, aged 22, both with one eye affected and both with vaginal discharge, in which the gonococcus was found. In both cases rectal injection of the antistreptococcus serum was given in conjunction with the usual silver nitrate treatment of the affected eyes. The girl had a total of 60 cc. of the serum and the woman 71 cc. In neither case did the serum cause cessation of the vaginal discharge, nor disappearance of the gonococci. The girl was discharged at the end of forty-three days and now has vision $\frac{5}{60}$ in the affected eye. In the case of the woman, the affected eye had to be removed, and she left hospital in forty days. The conclusion was that in these two cases there was no apparent benefit from the serum treatment.

The following are the notes on the cases of arthritis:—

CASE 1.—Private M., 1st Battalion Scots Guards, aged 23, service one year. He had no personal nor family history of rheumatism. On

ERRATA.

VOL. IX., No. 2, August, 1907 : In the article on "The Treatment of Gonorrhœal Arthritis by Rectal Injections of Antistreptococcus Serum," by Lieutenant A. Dawson, R.A.M.C., page 190, line 21, for the words "Gram-positive gonococcus" read Gram-negative gonococcus."

January 31st, 1907, he was admitted to hospital with simple gonorrhœa. It proved resistant to the ordinary treatment by irrigation. Six weeks after admission pain and swelling developed in the left wrist and temperature rose to 103° F. He was given potassium iodide and mercury, and salicylate of soda was also tried, but there was no improvement. Hot air baths were given on alternate days and temporarily relieved the pain. This treatment was continued for five weeks with no improvement in the condition of the wrist. Patient's temperature varied between 99° F. and 100° F. and he was also troubled with pain in the left shoulder and elbow.

On April 25th, antistreptococcus serum injections were begun, 10 cc. being given, per rectum; this dose was repeated on the two following days. Temperature fell to normal after the second injection and the pains became much less marked. Three further injections were given. Pain disappeared from the elbow, shoulder and wrist, and the movement of these joints, which had been limited on account of pain and swelling, became normal.

He had a total of 60 cc. serum in nine days, during the first five of which salicylate of soda, 10 grains, t.d.s., was given and, in the last three, potassium iodide, 10 grains, t.d.s., but the improvement must be attributed to the serum, as previously, during the administration of these drugs, the patient experienced no benefit. At the end of the serum treatment there was still a slight urethral discharge containing gonococci, but this rapidly disappeared when injection of silver nitrate was begun.

The patient was discharged from hospital on May 29th, a month after the serum treatment had been begun.

CASE 2.—Private B., 1st Battalion Coldstream Guards, aged 21, service three years. There is no history of rheumatism in patient nor his family. He had gonorrhœa and syphilis in 1905. In February, 1907, he had a second attack of gonorrhœa, which was rather resistant to treatment and was discharged from hospital at the end of seven weeks. A fortnight after leaving hospital, he noticed pain and swelling in the right ankle, which had not been injured in any way, and at the same time there was a slight recurrence of the urethral discharge. Fresh contagion was denied, but he admitted drinking at least two pints of beer daily and smoking heavily since discharge from hospital.

He was readmitted to hospital on April 15th, 1907, when the right ankle was considerably swollen and signs of fluid could be made out below the internal malleolus, where there was also extreme tenderness.

Rectal injection of serum was begun on admission and, between April 7th and May 6th, eight injections, or a total of 90 cc. serum, were given.

On April 23rd and 24th, 120 grains of salicylate of soda were given, but did not give any relief.

For the first fortnight temperature varied between 98.6° F. and 100° F.

By May 6th the joint had practically recovered, but there was still slight urethral discharge containing gonococci.

Anterior urethral injections of potassium permanganate (2 grains to 1 pint water) were used and, in about a fortnight, no discharge, nor cocci, could be found.

The patient was discharged from hospital on May 21, five weeks after admission. He was seen ten days after discharge from hospital, during which time he had been doing duty and felt perfectly well.

CASE 3.—Private G., Irish Guards, aged 21, service one and a half years. His previous medical history was good, and no history of rheumatism could be obtained. He was admitted to hospital on April 26th, 1907, suffering from gonorrhœa of one week's duration, and for which he had not been treated in any way. On admission, the right elbow was swollen and red, while its movement was limited and caused great pain. Pain was also complained of in the right shoulder and in both knees, but no abnormality was made out in these joints. There was also some urethral discharge in which gonococci were found.

Rectal injection of antistreptococcus serum was begun immediately and repeated at intervals of about two days, until six injections of 10 cc. each had been given.

By May 10th the joints had recovered and movement was painless and free.

The urethral discharge, although slight, proved rather resistant to the usual treatment, and its removal was not accelerated by the serum treatment.

CASE 4.—Private C., Irish Guards, aged 20, service two years. There was no history of rheumatism. Patient was admitted to hospital on April 22nd, 1907, suffering from gonorrhœal urethritis, which, he said, had been contracted three weeks previously, but which had appeared only the day before admission. He complained of pain in the right hip, which was tender and painful on movement. The other joints were apparently normal. The pulse was irregular and there was a distinct systolic mitral murmur, the aortic and pulmonary sounds being normal. The apex beat was internal to the nipple line. Temperature on admission was 100° F. Two doses of 20 grains of salicylate of soda were given on the day of admission, but were not repeated.

On the following day serum treatment was begun, 10 cc. being administered per rectum.

Temperature varied for a week between 99° and 101°.

The pain in the hip lasted only for a day or two, but pain, distinct swelling and signs of fluid developed in both knees and both wrists and pain in both elbows. The pain and swelling rapidly appeared in one joint, then faded in a day or two, by which time another had become affected.

The serum injections were continued at intervals of two days, until 90 cc. had been given.

On May 9th, that is, seventeen days after admission, there was no pain, and joint movements were normal.

The urethral discharge was rather difficult to get rid of, even under irrigations of potassium permanganate and silver nitrate. As the mitral murmur had not quite disappeared, patient was kept in bed for a month. He was then allowed to get up for a few minutes, the time being gradually extended until he spent the whole day out of bed. He was sent on sick furlough in the end of June, by which time the heart sounds were almost normal.

Conclusion.—The duration of the joint trouble in these four cases was very much shorter than is usual in gonorrheal arthritis when treated by the ordinary remedies. Also the function of every joint affected was preserved unimpaired. On the whole the serum did not appear to be of any value in the treatment of the urethritis. These results are sufficiently satisfactory to warrant a more extensive trial of this treatment. The method of injection is efficient and causes much less discomfort to the patient than subcutaneous injection does.

Looking Backward.

THE CORPS.

By MAJOR S. F. CLARK.
Royal Army Medical Corps.

COLONEL FORMAN pleads for an occasional article in lighter vein, and though this paper lacks the trenchant touch of his picturesque and graphic pen, it may, perchance, interest young and old alike, by recalling to the veteran some of the changes that twenty years have brought about in our Corps, and by causing the recruit to realise how he is enjoying the results of the labours and struggles of his forerunners.

Can any one of us who has reached the sweet security of a pound a day forget the "Twelve Years War," which broke out suddenly in 1887, and after a campaign in which heavy fighting alternated with periods of inactivity, was brought to an end by the treaty (or warrant) of 1898, which gave us the fruits of victory? Both sides had fought stubbornly and well, and the former antagonists have now settled down together on such friendly terms that they cannot conceive why hostilities were necessary at all. However, I believe this prolonged fighting was one of the propulsive forces which initiated the great increase in efficiency,

in *esprit de corps*, and in determination to be second to none, which have become such pronounced features of the recent history of our Corps, and therefore it will always remain a great landmark in our chronicles. The *casus belli* was the warrant of January, 1887, which abolished relative rank in the Army, so that the changes in our ranks and titles which have taken place since then would seem to have first claim to notice. Up to that time substantive, honorary, and relative rank existed in the Army. We held the last-named, but as we got nothing tangible in its place when it was done away with, the profession refused to supply enough candidates for the Service until more satisfactory conditions prevailed. This was what ignorant persons called the "strike of the Army doctors," but there is no doubt that this absence of candidates had a profound effect on the Army at large, as well as on the medical branch of it.

Twenty years ago we were commissioned as "Surgeons," with the relative rank of Captain, and wore the two stars, which at that time were the mark of that grade. Then, after twelve years service, came "Surgeon-Major," with the crown and relative rank of Major. After twenty years, a weird thing happened—the officer added a star to his crown and ranked with a Lieutenant-Colonel, but was still called a Surgeon-Major. Then came the fixed establishments of Brigade-Surgeon (as Lieutenant-Colonel), Deputy-Surgeon-General (ranking as Colonel), Surgeon-General (as Major-General) and Director-General, who also ranked as a Major-General. About 1891 we were given the compound titles of Surgeon-Lieutenant, Surgeon-Captain, Surgeon-Major, Surgeon-Lieutenant-Colonel, Brigade-Surgeon-Lieutenant-Colonel, Surgeon-Colonel, and Surgeon-Major-General. These, which were said to be substantive ranks, lasted till 1898, when they were changed for those we now hold, and the Director-General about this time was given the rank of Lieutenant-General. These compound titles were never popular, and are generally believed to have been killed by "Brigade-Surgeon-Lieutenant-Colonel," added to the ridiculous mistakes civilians made in using them. "Sergeant-Major" and "Sergeant-Captain" became daily modes of address, and I was once given the puzzling title of "Lieutenant-Captain."

It is really hard to find something in which no alteration has taken place during the last twenty years. The whole character of the entrance examination has been changed, the subjects are different, the marks obtainable have dropped from thousands to hundreds, a new system of appointing examiners prevails, and the

individual and laudable efforts of some of them to exclude undesirable candidates have been exchanged for the formal inquisition by the Advisory Board. The successful men no longer have a four months' probation at Netley, which did not count as service, but they begin their career—with effect—at Millbank. To many of us older hands the time spent on the banks of Southampton Water has many fragrant memories, though a daily wage of eight shillings did not go very far, but Holt was kind, and allowed an overdraft on our newly-fledged bank accounts. Here we were officially known as Surgeons-on-Probation (S.O.P.'s), existed on sufferance, wore (with other things) one star and no sword, and ordered full dress uniform at the tailor's risk—for the possibility of failing to pass out began to be a reality about this time. From here each batch passed on to Aldershot for a month, and was then scattered all over the Kingdom to stations large and small.

Our uniform has not escaped the hand of the reformer. When I joined most officers were wearing red tunics and mess jackets, but twenty years ago blue cloth with black velvet facings were the regulation colours. In 1898 the latter were changed to dull cherry, though many of us think that we are entitled to have facings of a royal hue. The mess dress has been altered beyond recognition: the jacket with a rolled collar came in, the red waistcoat buttoning up to the throat went out, and the broad gold stripe on the overalls gave place to the present dull cherry railroad track. As for our ordinary every day dress, only the boots are untouched. The broad red trouser stripe has shared the fate of its comrade of the mess overalls, the natty patrol jacket with its hooks and eyes, gold false collar, and lapels of mohair braid is only a memory, the white gloves have turned to brown, and the gaudy gold lace cap has been placed on the retired list. I do not regret the passing of this kit, as certain town bands copied it very faithfully, and small boys had a habit of interrogating one as to the place and hour of the afternoon performance. This sort of thing reconciled one to a change, and the writer still remembers his experiences when—in all the glory of a brand new gold hat—he once met a ladies' seminary on its daily trek. The gold trimming of our tunics has been altered, while the brass spurs and scabbard of the field-officer no longer exist. The blue field service cap is out of date, but, like the now re-instated blue jumper, it never quite disappeared. Our great coats have lost their capes, and have changed their colour from blue to khaki, while service dress and the frock coat are recent additions to our wardrobe. The Sam Brown belt used to be unknown on home service,

and we have exchanged the staff badge of the lion and crown for our present distinctive design of the rod and serpent, with its proud and bracing motto.

Even our name has had several phases. In 1887 we were the "Medical Staff," which a few years afterwards became the more distinctive "Army Medical Staff," while our men were the "Medical Staff Corps." In 1898 we were welded together as the "Royal Army Medical Corps." In India the brass letters borne on our khaki shoulder straps originated as "M.," developed into "A.M.S.," and finally found salvation as "R.A.M.C." I have specimens of all three which I actually wore, each in due course.

The other changes are too numerous to deal with at length, especially as I keep thinking of fresh ones, so I shall merely give a list of some of them. During the twenty years I wot of, our pay has been increased. Charge pay and specialist pay have been introduced, company and sanitary officers have been appointed, the Advisory Board has been established, the Director-General no longer holds office for seven years, the staff at Headquarters has been largely augmented, the foreign service roster has ceased to be a secret document, our terms of service abroad have been altered, examinations for promotion have been initiated, the Royal Army Medical College has arisen, the rules affecting us during prolonged illness have been made more liberal, the name "Station Hospital" has become obsolete, the Q.A.I.M.N.S. has been formed, our men have been divided into sections, stretcher drill has been radically changed, brevet rank has been granted to us, the period of promotion to Major has in certain cases been shortened, all commissioned ranks are now mounted on service and manœuvres, field hospitals and bearer companies have been metamorphosed into field ambulances, Colonels are placed on half pay after four years in the rank, and are retired at 57 instead of at 60, three years service in certain ranks are required to obtain the pension of those ranks, our JOURNAL has been born, and last—but by no means least—promotion to Lieutenant-Colonel after twenty years service has been erased from the Pay Warrant.

Regiments keep a chronicle of their records, and I think a history of the Army Medical Service should be written before many of the smaller matters of interest are lost in the mists of Time.



Travel, &c.

EGYPT AS A FOREIGN STATION.

By MAJOR F. W. HARDY.
Royal Army Medical Corps.

THE Army of Occupation in Egypt is stationed at Alexandria, Cairo, and Khartoum, the troops at the last-named place being, however, under the command of the Governor-General of the Soudan. There is also one company of infantry in Cyprus. The total force numbers about 5,000. The Royal Army Medical Corps numbers 19 officers, including 2 Quartermasters, 2 warrant officers and 113 rank and file.

Alexandria is the principal port of Egypt. The climate is very good and healthy. The heat in summer is by no means excessive as there is nearly always a cool breeze off the sea. In winter there is a good deal of rain and wind. The garrison is as follows : One battalion of infantry at Mustapha, some 3 miles to the east of Alexandria on the seashore, where there is a non-dieted hospital in charge of a junior officer, who occupies quarters in barracks and lives at the infantry mess. The hospital is at Ras-el-Tin, a promontory on the north side of the harbour and adjoining the Yacht Club. There is a quarter here for one unmarried officer. The officer in charge is on the lodging list. There are a few men of the Garrison Artillery at Fort Kom-el-Dik and military police in the town, as also the Headquarter Staff. During the summer months musketry is carried out at Mex Camp, some 4 miles to the eastward.

Cairo is the headquarters of the Army of Occupation, distributed as follows : At the Citadel, about 200 feet above the town, one infantry battalion, a few gunners, the Military Hospital and Detention Barracks.

At *Abbassiyeh*, 3 miles to the north, a regiment of cavalry, a battery of Royal Horse Artillery, a battalion of infantry, some military police and mounted infantry.

At *Kasr-el-Nil*, in the town, a battalion of infantry, one company each of Royal Engineers, Army Service Corps and Army Ordnance Corps ; also details.

The climate of Cairo is very dry. Rain falls on about five days a year. In the early summer sandstorms, with hot winds, are liable to occur, and the thermometer will register 110° F. or more

for a day or two, to be followed by a spell of cooler weather; later on the heat is not excessive, usually from 95° to 100° F. in the day time. The nights are almost always cool. September and October are trying because the Nile is in flood and the atmosphere loaded with vapour. The winter is delightful, almost too cold at times, especially after sunset. There is no malaria, but often a good deal of sickness. The town is built on cesspools. Very young children are the principal sufferers, especially bottle-fed infants. Children aged 3 and over do very well.

The distribution of our officers is as follows: Principal Medical Officer and Sanitary Officer at the Headquarter Office in town, both on the lodging list. At the hospital, usually six officers, of whom two are on the lodging list and two Quartermasters—one in charge of medical stores—both in quarters. At Kasr-el-Nil, one officer on the lodging list. This officer has charge of the soldiers' wives and children in the Anglo-American Hospital. At Abbassiyeh two officers in quarters.

Khartoum.—The British troops at Khartoum consist of the headquarters and six companies of a battalion of infantry and a detachment of Garrison Artillery; the remaining companies of infantry and the women and children being stationed at Alexandria. There are two Royal Army Medical Corps officers doing duty and they are relieved every year. It is a sound thing to volunteer for Khartoum on arrival and get it over. The British barracks are well built, and the officers' quarters comfortable and fitted with electric fans and light. The climate is dry and very hot for nine months of the year, but the nights are fairly cool. Dust storms are frequent in the early summer. There are hardly any mosquitoes owing to vigorous measures being taken against these pests, but sand-flies are often troublesome. Khartoum is the place for the sportsman; sand-grouse and gazelle are to be found locally, whilst big game of every description may be obtained by going some distance. For those scientifically inclined unrivalled facilities exist at the Khartoum College, where Dr. Balfour, the Director, does a great deal to assist and encourage our officers in the study of tropical diseases and entomology. Every one joins the Sudan Club, which is a pleasant meeting place. There is also polo at Omdurman twice a week. During the winter Khartoum is much frequented by tourists.

Cyprus is a pleasant station for a married officer. For 4½ months the troops are stationed at Troodos, 5,000 feet above the sea, and for the remainder of the year at Polemedia near Limassol.

There is fair shooting in the winter time, chiefly snipe and duck. The English population is almost entirely official.

Extra pay, allowances, &c.—The military hospitals carry charge pay as follows: Cairo, 10s.; Alexandria, 5s.; Khartoum, 2s. 6d. There are besides a Sanitary Officer and Surgical Specialist. The allowances generally are good, lodging allowance being about double the home rates, though it does not now cover one's rent. All officers draw a Khedivial allowance of 3s. a day; servants allowance is 1s. 6d., while those for fuel and light and provisions are much the same as in other places. Forage and groom's allowance can be drawn by all officers of field rank besides others in certain charges. Officers of the Army of Occupation escape customs duty on nearly everything except bicycles and motor cars.

Clothing.—During the summer months nothing is so good as washing suits of unbleached Soudanese cotton, a very soft and cool material, which one of the numerous native master-tailors will make up for about a pound a suit. In addition to these, thin flannels are suitable. Ellwood's solar topees are also required. During the winter months European clothing can be worn, and a great coat is by no means amiss in the evenings. As regards uniform, the white helmet is worn in full dress, summer and winter; cotton khaki in summer and sometimes in winter; the field-service dress is not uniform in Egypt, but is often worn for its warmth, as is also the blue serge patrol, which has always been a strong favourite. Frock coats are very seldom required. White mess kit is worn in summer, blue in winter; white waistcoats are worn.

There are excellent shops in Cairo and Alexandria, but prices are rather higher than at home, so that it is well worth while to bring out clothing. This remark does not apply to summer uniform and plain clothes, which are better obtained locally. With regard to ladies, there are excellent milliners and dressmakers in Cairo. Their charges are somewhat higher than at home. Ladies require plenty of washing dresses, and the same remark applies to children.

Voyage out.—The voyage out lasts thirteen days, so that an extensive wardrobe is not required. During the trooping season ordinary English clothes are all that are required. The Mediterranean is often quite cold.

Accommodation on arrival.—There are numerous hotels in Cairo and Alexandria, nearly all expensive, the usual terms for officers of the Army being about 16s. a day. There are in addition several pensions which, besides being expensive, are uncomfortable. A married officer without children will generally find an hotel in

winter, and in summer a furnished flat, the most satisfactory. The latter are usually to be obtained at very reasonable rates, because Egypt empties in the most extraordinary way during the summer owing to its proximity to Europe. With children, however, it is essential to take a flat. The rent of these has nearly doubled in the last two years—one result of the *entente cordiale*—and it is now difficult to get one of seven rooms in the English quarter under £200 a year. It is generally necessary to go to the expense of putting in stoves, electric light, and baths as well. Houses are prohibitive and very scarce. Bachelor officers are usually in quarters and live in one of the numerous regimental messes. Those in the town live at the Turf Club, where messing is good and very reasonable. The quarters allotted to the Royal Army Medical Corps are quite unsuitable for married officers.

Furniture.—This is best procured locally, where it is fairly cheap. An exception might perhaps be made in favour of beds, which must be provided with mosquito nets. Glass and china may as well be brought, although everything can be obtained in Egypt, including very dainty French china. Unfortunately, furniture cannot be hired.

Servants.—Servants are expensive and indifferent. They are either Berberines, from the Northern Soudan, or Egyptians. A bachelor officer usually pays his "boy" £2 5s. a month, and unless he keep a pony no other servant is necessary. Married officers can hardly do with less than three: a cook, who will cost at least £3 a month, and will probably make half as much again out of the bazaar account, a *suffragi* or "table-boy," £3 a month, and a second "boy" for about £2. At these prices you expect your cook and boy to speak a little English or French. It is an enormous advantage to learn Arabic and dispense with English-speaking servants.

Leave.—Leave can be accumulated for two years or taken yearly. When expense is no object, the latter is the better plan. England can be reached in five days by P. & O. Express *via* Brindisi, and six days by other continental routes; Switzerland is very accessible *via* Genoa or Venice and the Gotthard or Simplon tunnels. Those who do not wish to go so far can journey to Cyprus, an extremely interesting country, where living is cheap. In the winter nothing is more enjoyable, especially to the antiquarian, than a trip up the Nile, which can be done by river, train, or a combination of both methods. Passages to England by "all sea" have recently been much reduced during the summer months. Ladies and children can quite well spend every other summer in Egypt.

Amusements.—During winter, Cairo is gay enough to satisfy the most exacting. The larger hotels give weekly dances, and, with private ones added, the enthusiast may dance nearly every night. There are two clubs to which everyone belongs, the Turf Club, founded by Surgeon-General Sir T. J. Gallwey, K.C.M.G., subscription £7, entrance £5, situated in the town; and the Khedivial Sporting Club, subscription £3 10s. for bachelors, £5 for families, situated at Ghezireh, about two miles out of Cairo. Here every description of games is played: polo, tennis, croquet, squash-racquets, golf, cricket, hockey, football, and racing. At Alexandria the Union Club in the town, and the Sporting Club near Mustapha, though very much smaller, fulfil similar functions.

Of shooting there is not a great deal; duck and snipe chiefly, and both very wild.

Motor cars are now greatly in vogue, although there are no roads of any great length, the longest being eight miles out to the Pyramids. Cars are in great request for getting to Ghezireh, especially amongst the Abbassiyeh garrison, who have six miles to go to get there. It is best to bring one out from England. As there are no hills except to the Citadel, a car of high power is not required. The 8 h.p. de Dion is about the most useful, as it is easier to get spare parts and repairs for it, but Messrs. Humber have now a branch here. The working parts require ample protection from dust, and the rear wheels studded covers, as the roads when watered are very slippery. For this reason motor cycles are not advisable. Ordinary cycles are useful except to those quartered in the Citadel, who are apt to find the hill trying.

Ponies—mostly Syrians—are to be obtained from £20 to £30. They are from 14 to 14½ hands high. Polo ponies are of course more expensive, but very good untrained ponies can be imported from Damascus for about £35. It is usual to get these when remounts are being procured. The Cyprus ponies are excellent, wonderfully strong and hardy. They are, unfortunately, mostly small. There are always second-hand carriages of the two wheeled variety to be obtained for about £20. These are generally advertised in the Club. Harness and saddlery can be obtained the same way. Those who bring harness from home should remember that the Syrian is not nearly so thick set as an English pony of the same height. It is absolutely essential to keep a governess cart and pony or donkey for children, as their health is entirely dependent on getting out of the town twice a day. It costs about £3 5s. a month to keep a pony when stabling is available in barracks. This includes everything.

At Alexandria sailing is greatly in vogue, and regattas are frequent during the summer.

Education.—There are various convent schools, which are good but mixed. It is usual to have a governess for younger children. Many people have French or Swiss governesses. In Alexandria it is an immense advantage to be able to speak French. Instruction in all foreign languages is easily obtainable.

To sum up, Egypt is a very pleasant and agreeable station with many advantages, but those who are married, especially if they have children, will find it expensive.

THE KING EDWARD VII. SANATORIUM.

BY CAPTAIN G. H. GODDARD.

Royal Army Medical Corps.

THIS institution is the result of a gift of £200,000 made to His Majesty by Sir Ernest Cassel, and is intended "to afford accommodation for the large class of persons of slender means, in professional or other employments, for whom no provision for sickness of this kind at present exists." (H.M.'s speech at the opening ceremony, June, 1906).

Its doors are open to officers of the Services, clergymen, schoolmasters, and any member of the educated classes suffering from tubercle of the lung or throat in the very early stages of the disease, at the same time assisting to educate the public regarding the advantages of a sanatorium course both as a curative and as a preventive means of treatment.

The King Edward VII. Sanatorium is situated in West Sussex, about eight miles to the north of the South Downs, which separate it from the sea. It stands in its own grounds of 150 acres, at an altitude of 500 feet above sea level, and about eighteen miles from the coast. On the road it is six miles from Haslemere and four miles from Midhurst railway stations. Surrounding it are many fine pine woods, affording protection from wind and sun to those taking their exercise on the "measured mile" and at the proper gradient. Good moorland walks commanding fine views of the surrounding country can be indulged in by "arrested cases" ordered longer exercise.

The water supply of the Sanatorium is abundant and excellent in quality. It is collected from a series of springs rising in the

neighbouring village of Henley, and is pumped up to a reservoir on the estate capable of receiving 160,000 gallons. "The soil is the lower green sand of the lower cretaceous series!"¹ The drainage is connected with the water-carriage system of the town of Midhurst.

Flower gardens have been laid out around the building, and here employment is found for suitable cases with specially constructed light garden tools. A garden entrance facing south leads to the patients' part of the building, consisting of a central block of three floors flanked on the west by a wing for male patients and on the east by a corresponding one for women patients.

From end to end—east to west—the building measures 700 feet. All the bedrooms, one hundred in number, face the south, and measure for the most part 14 feet by 11 feet 6 inches and are 11 feet high, *i.e.*, about 1,750 cubic feet capacity. Each has a balcony in front, so that bed and patient can, if necessary, be moved into the open air through the large double French windows which, with the fanlight over them, occupy almost the whole of the outer or south side of the room. Each bedroom door has a large window over it, hinged at its lower border and opening downwards by a special mechanical contrivance. There is a window in the passage on each landing opening into the outer air, and situated immediately opposite each bedroom doorway. All windows, doors, and fanlights have to be kept open day and night in all weathers, and thus the room is being continually flushed with air currents. (Such a word as "draughts" is, in sanatorium language, unknown). The floors of the rooms are of wax-polished teak, and like the decks of a ship, take no damage from the pools of rain-water which frequently lie on them. All the corners of these bedrooms are rounded off in the same manner as a modern operating theatre, to prevent dust collection and to facilitate cleaning. The walls of the rooms are covered with a patent wall paper (*Salubra*) which can be scrubbed with hot water and soap, and thoroughly disinfected with carbolic, izal, &c. Each room is fitted with electric light and contains a hot water radiator. The bedroom furniture, restricted in amount to the least necessary for bare comfort, is made of polished birch, and is so constructed—with rounded top to wardrobe, glass stand to chest of drawers and marble slab for washing stand—as to obviate deposit of dust. A small mat for the

¹ "Souvenir of the King Edward VII. Sanatorium."—*Architectural Review* (no date given).—G. H. G.

bedside is all the carpet allowed, and no clothes, papers, books, &c., are permitted to lie about the rooms. The head-end legs of the bed are raised on large castors to facilitate moving, and handles about six inches long serve the double purpose of keeping the bed a proper distance from the wall, and of aiding when lifting bed and patient on to the balcony.

Each landing has four bath rooms lined with white glazed tiles, paved with "terrazzo" and containing solid porcelain baths (Doulton and Co.). On the ground floor are the hydrotherapy rooms, one for each side of the building, containing shower baths, hose pipes, the wave and spray douches. These are ordered for suitable cases, and seem to encourage that free action of the skin which is so necessary an effect to produce in all toxæmias.



Central block and west wing, facing south.

On the ground floor also are two recreation rooms and two writing rooms. Use of these rooms is prohibited until after tea-time. They are provided with open fire-places for the sake of cheerfulness—the only open grates in the patients' part of the building. The corners of these rooms are rounded, and the furniture, consisting of easy leather chairs, &c., takes to pieces for washing and disinfecting. Practically the whole south side of the wall is one great window; windows also open from these rooms on to the corridor. (The dictum of "windows not being ventilators" is over-ruled at a sanatorium).

The Administration Block faces north, and consists of quarters

for the medical and nursing staff, consulting, dispensary and operating rooms, dining hall, kitchen and post-office. It is joined to the Patients' Block by a central corridor used as a lounge.

The Dining Hall is a large and lofty apartment, the walls of which are lined with Doulton's Carara ware; the floor is of York stone, which can be heated from below by a modern adaptation of the old Roman system, or hypocaust,¹ substituting steam pipes for the open fire-places then used. Window space and cross ventilation have been well provided for; in fact, so free is the interchange of fresh air that difficulty is encountered by the kitchen staff during winter months in serving the dishes hot. The dining room is easily convertible into an entertainment hall by collecting the tables at one end to form a platform, and here concerts, &c., are held for the amusement of the patients without necessitating the inhalation of such quantities of CO₂ as is generally the case in most crowded concert rooms. At meal times the sexes sit at separate tables, meeting only in the corridor and in the grounds, where *promenades à deux* are strictly forbidden. The question of sanatorium friendship between the sexes, leading possibly to subsequent marriage, is one in which, doubtlessly, all directors of these institutions feel a heavy responsibility, and many have felt themselves called upon to declaim the iniquity of such marriages.²

Separated from the Main Block are the pathological and research laboratories, where original investigation is being carried out, and where the opsonic index of all patients is estimated. In suitable cases injections of Koch's new tuberculin (T. R.) are given, and the results on the opsonic index carefully recorded.

The unique open air Chapel was presented to His Majesty by Sir John Brickwood. It is built in the form of the letter V with the chancel at the junction, and the two arms of the letter representing the two naves of the chapel. A gravel court is enclosed between these arms, and in this court is placed an open air pulpit for use in fine weather, when chairs for the congregation can be transferred from the Chapel to the court. In cold weather the floor of the Chapel can be heated in the same manner as the Dining Hall.

The daily routine of the Sanatorium is as follows all the year round :—

¹ "Souvenir of the King Edward VII. Sanatorium."—*Architectural Review* (no date given).—G. H. G.

² *Brit. Med. Journ.*, February 16th, 1907, p. 400.

The temperature is taken and the patient called at	7.30 a.m.
Breakfast in dining-hall, unless otherwise ordered...	8.30
Rest on balcony for visit of medical officer ...	9.30
Exercise, or gardening, or rest, as prescribed ...	10—12
Rest on chair, or bed, in silence	12—1
Mid-day temperature	1 p.m.
Luncheon	1.15
Exercise or otherwise, as ordered	2—4.30
Tea in lounge	4.30

This constitutes the most stringent period of the day, during which the patient is expected to devote every minute to his "cure"; after tea until bed-time a certain amount of relaxation is allowed.

Evening rest-hour, on bed or chair, in silence ...	6—7 p.m.
Temperature taken	7
Dinner in dining-hall, unless otherwise ordered ...	7.15

Recreation.—Cards, round games, music, &c., as arranged by Patients' Games Committee, till 9.30, when all must be in their rooms. A concert is held weekly for the entertainment of patients and staff.

Lights out	10 p.m.
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Those who prefer sleeping on the balcony of their rooms can do so. During the late winter with the thermometer down to 20° F., many patients slept out of doors with benefit.

DIET TABLES.

Breakfast.

<i>A (for men).</i>				<i>B (for women).</i>			
Porridge (cooked)	..	4 ozs. (with milk)		Porridge (cooked)	..	4 ozs. (with milk)	
Bread .. ..	..	2 "		Bread .. ..	..	1½ "	
Butter .. ..	..	½ oz.		Butter .. ..	..	½ oz.	
Eggs .. ..	..	1		Eggs .. ..	..	1	
Bacon	}	.. .. 1 oz.		Bacon	}	.. .. 1 oz.	
or				or			
Tongue				Tongue			
or				or			
Ham				Ham			
or	}			or	}		
Brawn				Brawn			
or				or			
Fish				Fish			
				Tea	}	q.s.	
				Coffee			
				or			
				Milk			
				Marmalade			
				or			
				Jam			

Luncheon.

<i>A (men).</i>					<i>B (women).</i>				
Milk	..	..	..	$\frac{1}{2}$ pint	Milk	..	..	..	$\frac{1}{2}$ pint
Bread	..	..	..	2 ozs.	Bread	..	..	..	1 $\frac{1}{2}$ ozs.
Butter	..	..	..	$\frac{1}{4}$ oz.	Butter	..	..	..	$\frac{1}{2}$ oz.
Meat	..	..	..	3 ozs.	Meat	..	..	..	2 $\frac{1}{2}$ ozs.
Pudding	..	..	..	5 "	Pudding	..	..	..	3 "
(Choice of milk or suet pudding)					(Choice of milk or suet pudding)				

miles in an hour, to take his temperature immediately on return and then after an hour's rest. *Per rectum* it should register not more than 100°—100·5° F. after exercise, and should fall to normal after one hour's recumbent rest. The apyrexial consumptive runs a constantly normal daily curve: ¹ 97° F. at 7.30 a.m., 98° to 99° at midday and at night. The temperature chart, opsonic index and general condition of the patient give the chief indications as to whether exercise may be permitted or not. Mouth and axillary temperatures are discarded as being useless while patients are exposed to moving currents of cold air, and in place of them rectal readings are taken by the patient. The fallacy in rectal thermometry is that after exercise there is a physiological rise of temperature, which, however, subsides after rest. In those cases where fistula or other anal trouble is present the temperature of the urine stream is recorded. A patient having a consistently normal temperature is gradually worked up to ten or twelve miles exercise a day, while fever cases are kept strictly at rest, and those with slight fever are allowed only short strolls which are soon stopped if it is found to raise the temperature. All running exercises, games involving severe arm work, dancing, &c., are forbidden; but rope quoits, croquet, and, for certain "arrested" cases, garden golf are permitted. Cycling is discouraged. A feature of the treatment at the King Edward VII. Sanatorium is the employment of patients on light gardening. Even hæmorrhage cases, judiciously selected, experience no ill-effects from this useful open-air employment.

Hæmoptysis.—Calcium lactate is employed with aperients in the slight cases. In severe cases a minimum diet is enforced for three days, together with ice, purgatives and morphia.

Prophylactic Measures.—Regarding prophylactic precautions taken to prevent contamination of soil and building, each patient carries during the day-time an aluminium sputum flask (Deitweiler), which is disinfected daily in the sputum room by a porter specially trained. The sputum is placed in a cylinder and subjected to a temperature of 282° F. for fifteen minutes and is then allowed to pass into the drainage system. At night an ordinary sputum mug is placed by the bedside. Paper serviettes are used for meals and burnt afterwards. Linen handkerchiefs are allowed but are boiled after use. Plates, knives and forks are placed in boiling water and

¹ "The Consumptive Working Man" (published by the Scientific Press), by Noel Dean Bardswell, M.R.C.P.Lond., M.D.Edin.

soda after being used. The cutlery, &c., of the staff are kept separate from that of the patients. Weekly lectures are given to the patients by the Medical Superintendent on the after-treatment of the disease, &c.

That a sanatorium course of treatment imposes considerable hardship during the winter months upon those undergoing its strict open air *régime* no one can deny; still, at the institution described, and doubtless in other similar places, such hardship is reduced to a minimum compatible with the open air existence which it is essential that a consumptive patient should lead. As Major Carter, R.A.M.C.,¹ has pointed out, it is important that a patient should go to a sanatorium as soon as his disease is diagnosed, and, if he wishes to live in England after taking his "cure," he should undergo that cure in England.

Plea for the Soldier Consumptive.—Is such treatment worth while is the question often asked? Do not "cured" cases frequently, if not always, relapse? The insurance companies in Germany have answered this question by erecting sanatoria for the treatment of their clients. Should not something of the kind be done for the consumptive soldier, so that at least he may be educated in the mode of life he should lead before he is cast back into civil occupation to swell the number of unfortunates whom no general hospital will receive and who, for the most part, obtain their advice and medicine after waiting for hours in the polluted atmosphere of an out-patient department?

Application for admission to the King Edward VII. Sanatorium must be made to the Medical Superintendent, accompanied by two certificates from householders certifying that the patient is not possessed of sufficient means to enable him to pay the four or five guineas a week charged in private sanatoria (the fee charged at Midhurst is two guineas weekly for each of the 100 beds). There must also be filled in a medical certificate signed by the practitioner attending, certifying that the patient is suffering from an early stage of the disease, and that it is a case likely to derive benefit from a sanatorium course of treatment.

The above is but a brief description of an institution founded for the relief of a complaint which, under the old method of treatment, succumbed to stuffy rooms, over-clothing, slop diet and horrible cod liver oil, but which, in suitable cases, may be per-

¹ "The 'Cure' of Phthisis," by Captain (now Major) J. E. Carter, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, April, 1904.

manently cured under the new treatment. As the Royal Founder has remarked—"If curable, why not cured?"

The writer begs to tender his grateful thanks to Dr. Noel Bardswell, Medical Superintendent at Midhurst, for kindly giving him the necessary facilities for writing this article, and to Mr. W. E. Bowen for his excellent photograph.

Reviews.

DICTIONARY OF MEDICAL TERMS. ENGLISH—FRENCH—GERMAN. By Paul Blaschke. London: Messrs. J. and A. Churchill. Pp. 450. Price 8s. net.

DICTIONARY OF MEDICAL CONVERSATION, ENGLISH-GERMAN AND GERMAN-ENGLISH. By Paul Blaschke. London: Messrs. J. and A. Churchill. Pp. 224 and 211 respectively. Price 4s. net each.

We have received these books, which will prove useful to readers of medical literature in French and German.

POST-GRADUATE CLINICAL STUDIES FOR THE GENERAL PRACTITIONER. By H. Harold Scott, M.B.Lond., &c. London: H. K. Lewis, 1907. Pp. x. + 166, and 35 diagrams. Price 8s.

The greater part of this book is taken up with an article on the "Causes and Treatment of Syphilis in the Army." Chief among the former is quoted "the lenient view which is taken of syphilis, not only by the combatant officer but also by the medical," and one is tempted to ask what qualifications the author possesses for making such a statement, one which is at once as grave as it is untrue. My experience is that the combatant officer takes a far more serious and intelligent view of syphilis than men of his own class in civil life, and that this has helped materially to the successful treatment of the disease in the Army; as regards the medical officer, the remarks made can, and ought to be, passed over with the contempt they deserve, bearing in mind the brilliant results which have followed his efforts to deal with syphilis, as compared with his *confrère* in civil life.

The description of the inunction method is, to say the least, antiquated; in fact, such as is carried out ordinarily in England, happily not in the Army.

One would like to know since when has it been decided that mercury is useless in late syphilis?

A propos of the intramuscular method, the author is much behind the times as to its technique and the preparations in use, and the one of mine which he quotes, I have long since abandoned for a more suitable preparation.

Suggestions are made as to the systematic treatment of syphilis in the Army, and here again the author is out of date, as this system has been carried out in the Army for some years.

The fact is, that one cannot help thinking that being a civilian, this author would have done far better if he had confined himself to enquiring into the treatment of syphilis in civil life in this country, than in casting reflections on the one place where the disease is efficiently treated in England.

F. J. LAMBKIN.

Current Literature.

Modern Firearms and the Army Medical Service in the Field.—

An important and practical article on this subject has been published in Supplement 131, 1907, of the German *Militär-Wochenblatt*. It is a lecture given before the Berlin Military Society, on February 20th last, by Oberstabsarzt Dr. F. Schaefer, who was attached to the Russian Army in Manchuria during the Russo-Japanese War.

With regard to the character and number of wounds with which the medical service will have to deal, the author puts forward the following practical results of his observations in Manchuria, results which depend partly on the small calibre of the modern bullet, its velocity and hard mantle, partly on the modern advances in surgical science, and partly on the nature of modern tactics. The number of men hit is not appreciably higher than in battles of former times, but they are concentrated into masses of wounded, who are hit suddenly and all together. Thus a body of troops may be fighting from under cover during a whole day with scarcely one man getting hit, when suddenly, on account of some necessary tactical movement, they leave cover and are mown down by the concentrated fire and machine guns of the enemy. To bring immediate help in such conditions is a serious problem for the medical service. The character of the wounds, on the other hand, compares favourably with that of older times, and healing is more rapid and more certain. Of 36,000 Russian wounded at the battle of Mukden in one army, 45 per cent. had returned to the ranks in four months; in some divisions the proportion was as much as 56 and 66 per cent. On the other hand, there are wounds of a very severe character, even with undeformed bullets, and it is the probability of having to deal with a limited number of very severe wounds, and a large number of very slight wounds that characterises the effect of modern weapons on the medical service.

On this point some of the author's views are extremely interesting, always practical, and expressed in pointed and forcible language. The general treatment of wounds, he says, has not only become more certain in results, but it has become simpler. We can work with far simpler material, and we can use expectant treatment where formerly we dared not. Formerly we had to amputate to save life; now amputation is rarely performed. On the Russian side only, one case in 200 wounded was amputated, or 0.5 per cent., and this included amputation of fingers.

In connection with the field medical units the most searching criticism of field medical organisation is made, and is full of suggestion.

On the subject of medical units with fighting troops, Dr. Schaefer gives

a graphic picture of the manner in which wounded soldiers either struggle on with their unit in actual battle rather than run the risk of being left behind, or seek the nearest village. He considers, therefore, that regimental dressing stations should not be opened at any fixed place or village, but that medical assistance should be brought up where it is wanted, and that at all villages in the neighbourhood of fighting there should be a regimental dressing station for the purpose of looking after wounded straying into them. He deprecates the practice of sending bearers to pick up wounded and bring them back the moment they fall. The first field dressing, applied by the man himself, by his comrade, or by the medical officer or other medical *personnel* at hand, is all that is necessary in the first instance. To carry the wounded back through fire is a danger both to the bearers and to the patient. The proper course to follow is to wait till there is a pause in the fighting or till it is dark. On the other hand, there are conditions of fighting where the dressing stations and line of medical assistance can be mixed up with the fighting troops, as, for example, in the Russian trenches in and around Pitiloffs' Hill, immediately after the battle of Shaho and at the battle of Mukden. There all the combatants were under splinter-proof cover, and there was no reason why the line of medical assistance should not be in the immediate front. As regards the number requiring carriage on stretchers out of the zone of fire, the ordinary conception makes it too high. Dr. Schaefer's conclusion is that more than two-thirds of all wounded can go back on foot.

On the subject of regimental stretcher bearers, it is noted that the Russian regimental stretcher bearer wears the Red Cross brassard, and that the Germans adopted the same practice until complaints were made of infractions of the Geneva Convention by these combatants during the Franco-German War. Dr. Schaefer makes the suggestion that regimental stretcher bearers should wear some distinctive uniform instead of a distinctive armlet.

With regard to the field ambulance or *Sanitäts-kompanie* of the German Army, Dr. Schaefer states that this was formed, in 1869, by a union of the former bearer company with the former mobile light field hospital. He describes the union as "an unfortunate marriage, as is usually the case with marriages where the two elements have and follow different interests." He considers the separation of the two essential in modern warfare, although, as in the case of all medical units, they must keep in touch with one another. So long as there is nothing to do they are together; but whenever there is real work to be done they part company. In fact, the bearer company, he says, is much more in touch with the regimental line of medical assistance than with the main dressing station. As regards the latter and its function, there are many very clear and important remarks in the article. The formation of a main dressing station, *Haupt-verband-platz*, is considered essential as a half-way station between the fighting troops and the field hospitals for the purpose of classifying the wounded into light and severe, &c., for the collection, refreshment, and temporary care of the wounded of a division, for the readjustment and inspection of the dressings applied in the fighting line, and to act as an evacuation unit for the battle field. On this last function the author's experiences during the Manchurian campaign are con-

vincing and arrest attention. He says, "the war that has just closed has brought into the strongest light the importance of this branch of the medical service. While the problem of first aid by means of a first field dressing has been solved, and the whole question of the first treatment of wounded has become much simpler than formerly, the duties connected with transport have become incomparably more difficult. Yet a good working system of evacuation of wounded is the forerunner of all other conditions. In fact, one may say that the whole medical service must stand or fall with the system of evacuation of wounded; and from a purely military point of view also, the army has the greatest concern in a good working wounded transport unit." The Russians began the war with a small amount of transport material for wounded, but kept adding to and improving it up to the very end. "Up to the very last days, previous to the signing of peace, the means of transport were being continuously increased, and at the end there was an enormous mass of waggons available for the medical service." Dr. Schaefer compares the existing provisions in the German Army for wounded transport very unfavourably with this, and with what he considers one of the most important, and, at the same time, most difficult problems of the field medical service, namely, the removal of wounded from the first line to the field hospital and to the railway line.¹ He considers that in the next few years there will be marked developments in this direction, especially in connection with the provision of light railways and automobiles.

With regard to field hospitals, a point of some practical importance is that there is in actual war much difficulty in getting the field hospitals sufficiently near the area of fighting, with a view to lessening the distance over which the severely wounded must be carried; but it is very desirable that one at least should be brought to the same village as the main dressing station, and take over the care of the severely wounded there. The field hospital should in fact bear the same relation to the main dressing station as *Klinik* to *Poli-klinik*; in other words, as the wards of a hospital to an out-patient department.

On the question of holding medical units in reserve during an action, the author of the article finds some practical difficulties, but ventures to express his opinion that to hold anything in reserve in connection with the medical service is a wrong principle. He holds the view that everything available should be brought into action as quickly as possible. In this respect his views are opposed to the experience and practice on the Japanese side, but he probably means that none of the medical units should be kept far back, but that they should be ready to open well up with the fighting line. His ideal of medical units there is to have a bearer company and a dressing station company as two distinct units with each division; and to have field hospitals well up near the dressing station or in close *échelon* further back.

In conclusion, he makes some pointed remarks about the necessity of trusting to the Geneva Convention in the case of retreat, and leaving field hospitals behind with their full *personnel* and material to look after the severely wounded. The Russians never did this until the battle of

¹ My own experience on the Japanese side, and the experience of the American medical *attachés* on the Russian side, are entirely in accord with Dr. Schaefer's observations in this respect.—W. G. M.

Mukden, by which time they had learnt that the Japanese attitude towards the wounded of the enemy was strictly correct.

His final observations are that the medical and surgical equipment must be of the simplest kind and, above all, suitable for field service. To strive after the most comfortable, according to modern ideas, and the most elaborate equipment, is out of the question. But after all, he says, the best recipe for a good field medical service is victory. "An army cannot provide for its wounded better than by being victorious"; and the medical service, its equipment and its *personnel*, must help towards this end.

W. G. M.

Trypanosomes of Mosquitoes and other Insects.—Növy, MacNeal and Torrey, in the *Journal of Infectious Diseases*, vol. iv., No. 2, April, 1907, give the results of an important investigation on this subject. They studied the flagellates in "wild" mosquitoes. As regards the origin of these organisms in the gut of insects they state "that they might be derived (1) from the trypanosomes of the blood of birds or other animals; or (2) they might be stages in the life cycle of cytozoon, as held by Schaudinn; or (3) lastly, they might be harmless, non-pathogenic parasites, peculiar to the insect, and in no wise related to either of the two types mentioned above."

The method employed by the authors for the investigation of the flagellates was to collect large numbers of "wild" mosquitoes and then feed them on perfectly "clean" animals; "clean" animals being those which are proved both culturally and microscopically to be free from trypanosomes and hæmocytozoa. The mosquitoes were wholly of the genus *Culex*, and the more common species was *C. pipiens* or *pungens*. The fed mosquitoes were kept for thirty to seventy hours and examined for flagellates, both microscopically and by cultures made from the intestinal contents on blood agar. The constant presence of bacteria in the intestinal canal of the insect is the chief obstacle to the successful cultivation of mosquito flagellates. Cultures were attempted from eighty-nine mosquitoes, all of which contained trypanosomes. Of this number only seven were positive. Of these two died out from bacterial overgrowth. Two were kept alive for twenty days through two and five generations respectively. One was carried in thirty days through twenty-four generations. A strain started on August 5th, 1905, is now (April, 1907) in its eighty-seventh subculture. The authors summarise their results and conclusions as follows:—

"(1) Of the 'wild' mosquitoes examined by us approximately 15 per cent. in one year and about 5 per cent. in that following were found to be infected with flagellates belonging to easily differentiated types of *Crithidia* and *Herpetomonas*. The percentage of infections is influenced largely by local and seasonal conditions.

"(2) By the cultivation method it has been possible to isolate two of these flagellates, namely, *Crithidia fasciculata* and *Trypanosoma culicis*, and it has been shown that the plate method is applicable for the separation of trypanosomes from the accompanying bacteria and yeasts.

"(3) The organisms obtained *in vitro* correspond to those observed *in vivo*, and hence the intestinal types represent true cultural forms.

"(4) The two types are common in other insects, and instead of being classed as distinct genera, they should be placed under the trypanosomes.

"(5) The mosquito flagellates are not stages of intracellular organisms, but are probably parasites peculiar to the insects.

"(6) The inoculation of available experimental animals with Crithidia and Herpetomonas has given negative results.

"(7) The *Trypanosoma noctuae*, as described by Schaudinn, represents the mixed characteristics of Crithidia and Herpetomonas, while that of the Sergents agrees with the Herpetomonas; as such, it does not represent a stage of the Halteridium.

"(8) The cultivation by Töpfer of a Spirochæta from the blood of an owl, presumably identical with Schaudinn's *Spirochæta ziemannii*, indicates the existence of a new spirillosis. The forms which the Sergents identified with *S. ziemannii* were probably not spirochætes but trypanosomes, more especially the long form of a Herpetomonas. The conclusion seems justified that neither the flagellates and spirochætes found in mosquitoes, nor the trypanosomes and spirochætes found in the blood of owls, are related to the leucocytozoon.

"(9) The trypanosomes which are at times present in ticks, are not developmental forms of Piroplasma. It has already been shown that the trypanosomes in tsetse-flies are not related to *T. gambiense* or *brucei*.

"(10) The possibility of the trypanosomes of birds and other vertebrates developing in the gut of insects, while not excluded, has not been demonstrated. In the mosquito *T. lewisi* and *T. brucei* lose their infectiousness more or less rapidly, but the enfeebled organisms may survive in the gut for thirty-six to forty-eight hours. The conditions in the digestive tube of insects are not as favourable as in the test tubes, and this fact goes to show that insect carriers, such as tsetses, are mere passive hosts."

In regard to the relation of insect flagellates to the blood forms of trypanosomes, the authors state "that the blood trypanosomes when grown *in vitro* lose their original form and present cultural characteristics which ally them to gut flagellates; it will be seen that the blood form in all probability represents the latest adaptation to a new environment of organisms which are originally derived from the intestines of insects."

The important results obtained from this investigation will prove of great assistance to workers engaged in a study of problems connected with the insect transmission of the causal agents of disease in the tropics. That the subject is an extremely difficult and complex one is proved by the fact that so able an investigator as Schaudinn had probably failed to recognise a serious source of fallacy in his experiments. Schaudinn's work on this subject will have to be repeated in the light of the knowledge obtained from this investigation. As is well known, Schaudinn considered that the intracellular parasites, *Hæmoproteus noctuae* and *Leucocytozoon ziemannii* of the owl, underwent a transformation into a flagellate stage in the alimentary canal of the mosquito. In the authors' opinion this flagellate is a normal inhabitant of the alimentary canal of the mosquito and has nothing to do with the intracellular parasites. The views of Schaudinn have been set forth in considerable detail in the most recent text-book of tropical medicine (*Handbuch der Tropenkrankheiten*, Bd. iii., Mense).

E. D. W. G.

Correspondence.

MAJOR SMITH'S RESERVE SCHEME.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—As a civilian who has undergone some military training and service, I have read with interest the extracts from Major Smith's paper on the subject of a Medical Reserve, which appeared in the July number of the Journal, particularly those which deal with the Reserve of civil medical men and male nurses. A good start is made by treating the subject as a purely business question, because, unfortunately, the majority of medical men cannot afford to be as self-sacrificing in their patriotism as people in other callings, therefore, unless the question is dealt with in this spirit, schemes, however excellent in other ways, will not succeed. During the discussion that followed the paper, it was said insufficient account seemed to have been taken of Militia, Volunteers, and various Voluntary Aid Associations, as means to the end in view. As regards the Royal Army Medical Corps Militia, the authorised establishment of officers is so small, and the training in nursing falls so far short of the minimum initial training suggested in part (C) of the paper, that the author could not be expected to assign to the Militia an important place in his scheme. Probably for like reasons the Volunteer Medical Service was not mentioned as a means for supplying a Reserve of trained hospital attendants. Moreover, since Militia, Yeomanry and Volunteer medical officers may, at any time, be required for duty with their own regiments and Corps, it seems unwise to admit them to a Reserve of medical officers, unless seconded in the force to which they belong. At the same time, it will probably be conceded that medical officers of the Auxiliary Forces are well qualified to discharge such duties as the Reserve officers would generally be called upon to perform, and some are capable of filling minor administrative posts. There would be no objection to drawing on this source of supply if selected medical officers of the Auxiliary Forces were seconded or transferred for duty in the Reserve. The foundation of a Reserve of officers could be laid in this way at any time, and if the practice was introduced the Auxiliary Forces might eventually constitute the means for training and supplying large numbers to the Reserve. In order to give a sense of reality to the business, it is advisable to assign, when possible, a definite place on mobilisation to each officer on joining the Reserve. Probably it is chiefly owing to the want of a dependable supply that it is not the fashion to employ male nurses in civil life. The Voluntary Aid Associations might do much towards altering the situation by establishing male nursing institutions, and so, in conjunction with the Army Medical Department, lay the foundation of a skilled nursing Reserve. It is not difficult to interest civilians in military medical work,

provided they can see it near their homes, and much could be done to bring the work in touch with the daily life of large numbers, if those military hospitals, however small, in or close to large towns and populous centres, were used as instructional units for probationary officers, N.C.O.'s and men, in the purely military side of the work. For instructional purposes a military hospital's position in relation to population is of infinitely greater importance than its size.

I am, Sir,

Wallasey,
July 10th, 1907.

Yours faithfully,
J. H. P. GRAHAM.

WANTED, AN EXPLANATION.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—I am much obliged to Major Durant for his suggested explanation *re* the absence of mosquitoes at Sarant Wadi, but if he saw the place himself he would be the first to admit that his solution is quite inadequate. The tank, or rather lake, is full of plants, particularly lilies, the shores are shelving with innumerable shallows that no fish, however small, could get into, the Residency is anything but the ideal abode which his fancy pictures, and on the opposite side the native town comes down to the shore, and its condition is exactly that of the villages he describes. Of course, when trying to solve the problem I thought of fish destroying the larvæ, but fish never eliminated mosquitoes anywhere, and never will. There are myriads of possible breeding places for mosquitoes in Sarant Wadi to which no fish could gain access, but there are neither mosquitoes nor larvæ. Why? My house in Bombay, both as regards construction and environment, is far in advance of the Sarant Wadi Residency, yet, if I tried in the former to sleep without curtains, a very few minutes would convince me of my folly, whereas in the latter I could do it, and did do it, with impunity, as did everybody else. I know of no place on the Plains of India, other than this, where everyone can sleep without curtain or punkah throughout the year, and I gravely doubt if such exists; nor is my experience a limited one, for at different times I have travelled from Peshawar to Tuticorin and from Karachi to Mandalay. I wish I were an expert on the subject of culicidæ, for it is, to my mind, just possible that this apparently unimportant fact—the absence of mosquitoes from this limited area where conditions seem eminently suited to favour their propagation—may contain within it the germ of discoveries whose application may conceivably have the widest signification in the elucidation of the outstanding problems connected with that tropical scourge, malarial fever. I quite admit that I am promulgating the vaguest hypothesis based on an isolated fact, and that there may be nothing whatever in it but

the vapourings of a vivid imagination; nevertheless, as a well-known officer in the Corps and an intimate friend of mine once wrote me some months ago, "we are far from knowing everything about the relationship of mosquitoes to malaria," and we all know that some of the most notable advances in medical science (vaccination, for example) owe their inception to the observation of such isolated facts, and are based, in greater or less degree, on empiricism. I am not going to let the matter alone if opportunity offers, but I wish I could interest some more competent observer than I can claim to be.

Bombay,
June 23rd, 1907.

I am, &c.,
R. H. FORMAN,
Colonel, R.A.M.C.

CASE OF ASPIRATION OF THE LIVER, &c.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—May I be allowed to answer the criticism of my case of aspiration of the liver which appears in your issue for last June (p. 661).

It is perfectly correct that the aspirating needle was not in communication with the exhausted bottle. I believe it is the custom, when searching for a small abscess, to partially withdraw the needle after the first puncture and push it into the liver in a different direction, and so thoroughly search that area of the liver without a second or more skin puncture. This is obviously difficult with a heavy bottle and stiff rubber tube connected to the needle. The extreme rarity of air embolism in connection with liver puncture must be my excuse for neglect of the precaution of attaching the bottle. With regard to the blood in the peritoneal cavity I must deny the soft impeachment of a punctured vena cava *in toto*. A probe was passed into the needle puncture and cut down upon, with the liver *in situ*. It opened a branch of the portal vein, and there was no indication whatever of any injury to the vena cava. The point of the needle had just reached this branch of the portal vein, only one wall of which was punctured. The *post-mortem* was performed by Captain E. T. Harris, I.M.S., who will doubtless confirm my statement on this point. The needle in question was three inches long. With regard to the suggestion that the position of the needle puncture was very low, I might remark that the lowest intercostal space in the anterior axillary line is given as one of the sites of election for aspiration of the liver in Osler's "Principles of Medicine."

St. Thomas Mount,
Madras,
June 26th, 1907.

I am, &c.,
N. Low,
Lieutenant, R.A.M.C.

Journal
of the
Royal Army Medical Corps.

Original Communications.

LIGATURE OF THE RENAL VESSELS BY THE TRANS-
PERITONEAL METHOD FOR THE CURE OF PER-
SISTENT URINARY RENAL FISTULA, WITH NOTES
OF ONE SUCCESSFUL CASE.¹

By MAJOR M. P. HOLT, D.S.O.
Royal Army Medical Corps.

Read before the Royal Medical and Chirurgical Society on May 28th, 1907.

(1) *Choice of Procedure : (a) Nephrectomy.*—In the absence of well-known contra-indications, nephrectomy is commonly acknowledged to be a legitimate surgical procedure in certain of these cases. But where there is extensive matting of the kidney and perinephritic tissues to surrounding structures, nephrectomy may be extremely difficult, or even impossible. The severity of the operation, the risk to the patient from hæmorrhage, shock, and damage to important organs and serous cavities, justify the authoritative admission that the maintenance of good drainage is then the sole resource, in the vague hope that at some future and quite uncertain date healing may occur.

(b) *Subcapsular Nephrectomy ; (c) Morcellement.*—In other cases subcapsular nephrectomy, piecemeal nephrectomy or morcellement may be tried, but these operations are often followed by prolonged suppuration or by permanent fistula, owing to a portion of renal tissue having been left behind, as it frequently is.

(2) *Disabilities attendant on a Persistent Renal Sinus.*—Taking the case of a young and otherwise robust man, who has to earn his

¹ Reprinted from the *Lancet* of June 8th, 1907.

living, and who would find the expenses entailed by the purchase of voluminous and frequently-to-be-changed dressings, or of any special apparatus, quite beyond his resources; or taking, on the other hand, the case of a weakly patient, in whom the drain of prolonged suppuration would appreciably curtail life, the surgeon may well hesitate before coming to a decision as to which of these methods to adopt.

(3) *Dangers and Difficulties of Nephrectomy.*—In not a few cases death from hæmorrhage alone has been the immediate result of operation.

Greig Smith recognised cases where the kidney and surroundings were so much altered that the kidney "could not have been removed from the body by any proceeding claiming to be regarded as surgical."

Mr. Henry Morris admits cases "in which it was difficult even to dissect the organ away in the *post-mortem* room," in which it is difficult or impossible to identify where kidney tissue begins and scar tissue ends (if, indeed, they are not inseparably blended), and in which, further, the closure of a urinary sinus is "sometimes impossible"; and other similar opinions could be quoted.

(4) *Nature of Case for which Renal Vessel Ligation Performed.*—It was upon a case of this nature that the operation which I devised was successfully performed. The patient was a short, thick-set, strong young man, otherwise healthy. Nine months before he came under my care he had sustained a rupture of the left kidney; his very short subcostal space was filled with scar tissue, and a sinus through which pus and urine were freely discharged. I made four attempts to perform nephrectomy, but had to abandon the operations, partly on account of furious hæmorrhage, partly on account of the impossibility of distinguishing renal from surrounding scar tissue. (Notes of the case are given below.)

(5) *No Precedent to go upon.*—I have not been able to find any reference to ligature of the renal vessels as an operation to secure a definite surgical result *per se*.

(6) *Experimental Ligation of Renal Vessels.*—In various physiological publications and text-books, references are made to atrophy of renal epithelium and cessation of urinary secretion as a result of ligature of either the renal arteries or the veins. Dr. Beddard's experiments on the frog (*Journal of Physiology*, vol. xxviii., 1902), even allowing for differences between batrachian and mammalian renal blood supply, lend support to the view that by ligature of the renal vessels the glomeruli of the whole kidney are cut out of the circulation, that complete ligature prevents spontaneous secretion of

urine, and that "cutting off the arterial blood-supply of the kidney causes the epithelium of the tubules to degenerate rapidly." De Souza (*Journal of Physiology*, vol. xxvi., 1900-1901) supports Heidenhain's contention "that the amount of urine secreted is directly proportional to the velocity of the blood-flow through the kidneys," and suggests that probably a similar result might be obtained by tying only the renal veins.

(7) *Deductions from Laboratory Experience.*—Reasoning on these lines I concluded that if the renal artery and vein were ligatured complete atrophy of the renal secreting tissue would be ensured, and supposing the presence of urine to be the sole hindrance to healing, that if once the secretion of urine within the limits of the abscess ceased, then healing by normal granulation would follow. And this, indeed, was found to be the case; the sinus healed, and I had a letter only a few days ago, nearly two years after the operation, in which the patient says he remains quite well, is earning a living, and that the sinus has never reopened.

(8) *Significance of Blocked Ureter.*—In the notes of the case it will be seen that evidence pointed to the conclusion that the ureter had become blocked. It seems obvious that when this is so a renal fistula can never heal spontaneously; it would be quite fortuitous that a blocked ureter (excluding, of course, the case of a removable, or movable, calculus) should ever again become patent. It is very seldom advisable to undertake any surgical proceeding with the object of re-establishing patency of a blocked ureter in old suppuration cases, for a successful result, even if achieved, is not likely to remain a permanent one.

(9) *The Presence of, and Final Cessation of, Urine in the Discharge from Sinus.*—At this point I may say that it remains a matter for regret that I did not have some estimate made from time to time during the healing period of the urinary constituents in the discharge from the sinus, for the purpose of comparison with similar analyses made before operation. The presence of urine in the discharge was only too obvious before the operation. After the operation for the first few days the discharge was scanty and smelt faintly of urine. Then, on the fifth day, a large amount of discharge came away in which the smell of urine was not apparent; nor was it ever again present, the discharge appearing as a clear, odourless serous fluid. Healing was complete on the fifty-seventh day after operation. Apparently, then, atrophy of urine-secreting epithelium occurred within five days or so.

(10) *Pathology of the Cessation.*—It must remain a matter for speculation whether infarction of the whole kidney occurred, or

whether a more gradual process of atrophy took place. The urine appearing in the discharge for the first few days may well have been a residuum remaining in the various recesses of the abscess.

Having stated the indications for, and the object of the procedure adopted, one or two points remain to be considered as to (1) technique; (2) advantages; (3) limitations of the operation.

(11) *Technique*.—(a) The technique is rather obvious, but remembering the possible existence of accessory or abnormal renal afferent vessels, a search should be made along the aorta to a limited but reasonable extent for these; Zondek found accessory arteries in five out of fifteen subjects examined.

(b) Asepsis can only be assured by avoiding the suppurating area at all costs; this is effected by keeping as far from the kidney as possible, and as close to the aorta and vena cava as is safe to apply a ligature.

(c) Access to the renal pedicle, in abdominal nephrectomy, is claimed to be safer when made through the outer layer of the mesocolon by reason of less danger to the colic blood supply; to follow this route, however, would almost certainly open up the septic area, and, moreover, the colon may be found inseparably united to the kidney. In my case no evil resulted from approaching the renal vessels through the inner mesocolic layer, and this notwithstanding that a search was made for accessory renal afferent vessels.

(12) *Advantages*.—Properly carried out there is little or no risk either from hæmorrhage, shock, or sepsis. As regards (a) *hæmorrhage*, this method is in great contrast to any form of piecemeal nephrectomy; (b) it is an *aseptic* operation, which nephrectomy would certainly not be; (c) subcapsular or piecemeal nephrectomy is at best a *very severe operation*; ligature is not so, and shock should not occur; there is inappreciable risk as regards possible damage to the colon or other surrounding organs and serous cavities (septic infection).

(13) *Limitations*.—Ligature of the renal vessels may be a very simple proceeding or may be insuperably difficult, and of course there may occur cases where the kidney is so closely adherent to the aorta or the vena cava as to make it impossible to apply a ligature to the vessels. Greig Smith mentions a case where "the aorta and vena cava were so adherent to the kidney that it was found impossible at the autopsy to dissect them apart." I take it that such a condition would be easily recognised through a sufficiently free opening in time to save a blunder. But in the case of the right kidney it might still be possible to ligature the artery by getting at it behind and to the left side of the vena cava, pushing the

latter vessel aside for the purpose of access. Ligature of the artery alone would suffice, on laboratory experience, to bring about atrophy of the renal epithelium; the right renal vein is so short (about one inch) that there would always be danger of opening the septic area in trying to isolate it for purposes of ligature. In the case of the left kidney the renal vein would be accessible, and ligature of this alone should bring about a similar result. Von Bergmann mentions a case of Schede's in which an elastic ligature necessarily included a part of the vena cava (vol. v., p. 400).

Consultations and Advice.—An unusual procedure of this sort was naturally not undertaken without first asking the advice of others whose experience would be of great value.

Firstly, on several occasions Sir Charles Ball very kindly saw the case with me. He quite acquiesced in the view that a further attempt at nephrectomy would not be justifiable, and when at a later date I suggested ligation of the renal vessels he agreed that, though there was no precedent to go upon, it would be worth trying. Finally, I showed the case to him when the sinus had quite healed.

To Professor W. H. Thomson, of Trinity College, Dublin, I put the question of the probable result in man of ligature of the renal vessels, and he argued that, from laboratory experience, immediate cessation of urine secretion might be anticipated, and then, at an early date, atrophy of the kidney should follow.

I had the great advantage of the valuable assistance and wide experience of Mr. W. S. Haughton, Surgeon to Stevens' Hospital, Dublin, at two of the attempted nephrectomies, and on each occasion he agreed that the profuse hæmorrhage justified abandonment of the operation.

At the final operation (ligature of the renal vessels) I was fortunate in securing the presence of Mr. Atkinson Stoney, Senior Demonstrator of Anatomy, Trinity College, Dublin, and Surgeon to the City of Dublin Hospital.

My gratitude to these gentlemen and to several officers of the Corps who helped me on many occasions is not easily expressed.

Conclusion.—In conclusion, though in the first instance this operation was performed when nephrectomy had been attempted and found impossible, I should not hesitate to employ renal-vessel ligation in the future as a substitute for nephrectomy where this latter operation promised great difficulty, and the likelihood of such severe hæmorrhage as might suffice to turn the scale between life and death in an exhausted patient. Moreover, as a preliminary to a subsequent nephrectomy (a septic operation), aseptic ligation

of the renal vessels would be sound surgery, though I claim that nephrectomy would then be unnecessary, as the ligature would be followed by rapid and permanent cure. Ligature of the renal vessels is surely a great improvement on any form of subcapsular piecemeal nephrectomy or morcellement. The former is a simple, the latter a very serious procedure, and both effect the same result.

While quite conscious of the imperfect support that a single successful case affords to a new method, the very rapid, satisfactory, and permanent cure so obtained seems to warrant my bringing the subject before the notice of the Fellows of the Society with some confidence that it may be deemed worthy of criticism at least, and possibly of some degree of approval as to its suitability in cases of a similar nature.

Brief History of Case.—C. M., aged 19.

September 14th, 1902.—Admitted. Kicked at football previous day. Severe pain in left loin.

October 2nd.—Large abscess opened close to left iliac crest; let out pus and urine. Diagnosis: Rupture of (?) kidney or ureter.

January 21st, 1903.—Extensive empyema evacuated; previous abscess still discharging pus and urine.

April 4th.—Abscess explored. It extended forward amongst abdominal muscles to near umbilicus, upwards to left pleural cavity, backwards and upwards to left kidney area, downwards into pelvis. Pus in vesical urine. Diagnosed ruptured kidney.

June 8th.—Sent to Dublin for nephrectomy.

June 21st.—Pyuria; pus and urine discharging from sinus in loin.

July 17th.—*Operation.*—Attempted nephrectomy; abandoned owing to profuse hæmorrhage; removed five calculi.

August 6th.—Scar in eighth intercostal space opened spontaneously.

November 10th.—Skiagraph; shadow of calculus in kidney.

November 12th.—Empyema scar again opened spontaneously, having remained closed six weeks.

December 1st.—*Operation.*—Attempted nephrectomy; abandoned owing to inadvertently opening peritoneum and inability to define limits of kidney tissue; three calculi removed; very profuse hæmorrhage.

March 6th, 1904.—Skiagraphed; further shadow of calculus.

March 15th.—*Operation.*—Two calculi removed; profuse hæmorrhage, therefore gave up attempt at piecemeal nephrectomy; unable to clamp pedicle; collapsed and critical condition for many hours.

September 26th.—Cathelin's separator. Right ureter urine acid,

clear, no pus or blood, no albumen. Left ureter urine neutral, opaque, "smoky," pus and blood-cells.

November 17th.—No pus in urine; free discharge of pus and urine from sinus. *Operation*.—Attempted nephrectomy; began by peeling peritoneum from scar tissue; opened peritoneum inadvertently, at once closed; further separation impossible; removed large calculus from (?) pelvis of kidney, having a rounded process of shape and size of ureter, one third of an inch long; kidney tissue and scar quite inseparable; very severe hæmorrhage. Saline transfusion adopted.

November 18th.—Sudden profuse hæmorrhage, threatening life; condition very critical for some hours; hæmorrhage controlled by gauze packing.

January 29th, 1905.—Urine (vesical) clear, neutral, no trace of albumen; no pus or blood-cells.

May 2nd.—Urine clear, normal; no shadow of calculus visible; abundant urine and pus from sinus. Cathelin's separator. Right ureter, urine clear, normal; none collected from left ureter.

June 13th.—*Operation*.—Laparotomy by Lennander's incision. Some difficulty in finding renal vein, owing to enlarged lymph glands; vein ligated, then renal artery tied and divided. No accessory afferent vessels found.

August 9th.—Sinus in loin completely closed.

August 15th.—Discharged quite well.

May 24th, 1907.—Letter to say patient remains quite well. Sinus has never reopened or given any trouble.

Until the last operation it had been necessary to apply every day four or more very voluminous dressings; even these were often quite insufficient to take up all the urine and pus, his bed and clothes occasionally becoming soiled. There was not the least tendency to heal, nor did the amount of discharge and urine ever tend to lessen until after the final operation.

Postscript.—Since writing the above I have come across the following (*Trans. American Surg. Assoc.*, vol. xiv., 1896, p. 312): Mr. Keen, in a paper on "Traumatic Lesions of the Kidney," when referring to hæmorrhage in subcutaneous rupture of the kidney, says: "Bobroff has advised to arrest the hæmorrhage by simple ligature of the renal vessels without nephrectomy, basing his conclusions on experimental grounds, which show that necrosis does not necessarily follow. I am not aware of any case in which this has been carried out in the human subject, and I should certainly not be disposed to recommend it. *If the vessels are ligated the kidney will probably not remain functional, and is at least liable to necrosis or atrophy.*"

THE DIAGNOSIS OF TYPHOID AND PARATYPHOID FEVER BY MEANS OF CULTURES TAKEN FROM THE BLOOD IN THESE DISEASES.

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THE early diagnosis of typhoid is so important, especially from the point of view of preventive medicine, that numerous attempts have recently been made to evolve a simple and practical method for its attainment. Pathological conditions clinically indistinguishable from typhoid fever may be due to bacteria other than the *Bacillus typhosus*, and diseases so utterly unlike typical typhoid, as hepatitis, adenitis, sore throat, cholecystitis, &c., have been set up by this organism. Many cases of slight fever undoubtedly go unrecognised as typhoid, and may possibly act as foci for endemic and epidemic enteric.

The laboratory methods at our disposal for the diagnosis of enteric are: (1) The serum test of Widal; (2) isolation of the *B. typhosus*, or its allies, from (a) the stools, (b) the blood.

As in typhoid fever, agglutinins are rarely formed in the blood in any amount before the tenth day of the disease. Widal's test is not of much value for an early diagnosis. With either of the other two methods we may obtain, not only an early diagnosis, but also find out whether the disease we have to deal with is due to the *B. typhosus* or to one of its cousins, the paratyphoid and paracolon bacteria.

By the use of special media it is possible to isolate the typhoid bacillus from enteric stools in some 50 per cent. or more of the cases. The media (Endo, Conradi, and malachite green plates) necessary for their examination, however, are difficult to prepare, and the detection of typhoid colonies on these plates from other similar faecal bacteria is one of the most difficult tests in bacteriology. After a four months' trial, I have convinced myself that this method, owing to its trying and difficult nature, will never be adopted as a practical routine measure for the diagnosis of typhoid. Again, it is not every case of typhoid which has intestinal lesions, and in such cases the method of faecal examination would not be of any value.

The method of taking cultures from the blood in typhoid has many advantages and practically no disadvantages. Instead of

having to select out the typhoid bacillus from a host of other and closely similar organisms, as in a plate made from a typhoid stool, one has to deal with pure cultures only in the blood; at worst the *Staphylococcus* or some one other contaminating organism may be present. Until quite recently the only method of blood culture known was that of placing large amounts (4 to 5 cc. at least) of blood obtained from a vein in large flasks filled with broth. This method, while satisfactory from the laboratory point of view, is troublesome, not absolutely free from danger, and somewhat alarming to the patient; further, it uses up large amounts of media.

Within the last year or two, Conradi, Kayser and Castellani have devised methods of culture, involving the use of but small amounts of blood, which may be taken from the sterilised ear or finger. The success obtained by these methods justifies their further extensive trial. The principle adopted in all methods of culture from the blood is to (a) ensure the prevention of the bactericidal action of blood serum on any bacteria found in the blood, and (b) to encourage the growth of such organisms by the addition of nutrient material to the culture. The first need is supplied in Castellani's method by the excessive broth dilution the blood receives, and in Conradi and Kayser's methods by the addition of the antibactericidal agent, bile. The presence of nutrient materials like broth in the first method and bile in the next two, ensures the multiplication of any organism isolated.

An average of some 70 to 100 cases of typhoid are annually admitted to the Military Hospital at Robert's Heights, Pretoria, South Africa. More than four-fifths of these cases occur, as a rule, between the months of October and May. Between October, 1906, and May, 1907, about eighty cultures were taken from the blood of as many cases of suspected enteric. Widal's reactions were made in all these cases. Of these eighty patients examined, a positive Widal was obtained at some period of the disease in fifty-six. The minimum standard laid down for a positive Widal test was complete clumping in a 1 in 30 dilution, time one hour. At first the *B. typhosus* alone was available for Widal tests; later on I tested the blood sera of patients with the *B. paratyphosus* (A and B varieties) also.

METHODS OF BLOOD CULTURE AND RESULTS OBTAINED.

The first method of blood culture adopted was that of Castellani's, *i.e.*, the placing of small quantities of blood (three or four drops drawn under aseptic precautions from the ear or finger) into small flasks containing 100 cc., or less, of broth.

The Preparation of Sterile Pipettes.—Divide glass tubing into lengths of 5 or 6 inches. Plug either end of the tube with cotton wool. The plugged tube is placed in the flame till the cotton wool within the ends of the tube is brown in colour. These sterilised tubes may be packed away for further use. When required to make a pipette, heat the centre of the sterile tube in a blow-pipe flame and draw out the hot, pliable glass, till a long capillary tube (1 foot long) joins the two unheated ends of the glass tube. On dividing these capillary tubes in the centre two sterile pipettes are made.

Collection of the Blood.—Sterilise the skin of the finger or ear (the finger is more easily sterilised), by first washing with an antiseptic, then drying. Now dab some spirit on to the cleaned portion of the finger and set a light to it. After the spirit has burned off, the skin will be sterilised. Allow the finger to hang down till turgid, helping the congestion of the finger tip with a tourniquet. Puncture the finger (preferably the pulp), with a large-sized hypodermic-syringe needle. Collect as much blood as possible by suction in the sterile pipette. Place the blood in the flask containing broth. Shake the mixture of blood and broth. Incubate for twenty-four hours. If the presence of bacterial growth in the broth is indicated next day by turbidity, proceed as follows:—

Spread the incubated blood-broth or blood-bile mixture on an agar plate. The media used in the plates employed at first were those described by Endo, Conradi and Drigalski, the first being a fuchsin-agar, and the latter the better known lactose-litmus-agar medium. Latterly, however, a simple agar plate has been found to serve all purposes. If a growth of colourless colonies (Endo medium), transparent-blue colonies (Conradi medium), or grey transparent-looking colonies (on agar alone) were present, then one of these colonies was picked out and the bacteria forming it examined—(a) in a hanging drop, and (b) stained by Gram's method. The presence of a motile, non-Gram-staining organism growing in somewhat transparent colonies on agar media is almost conclusive evidence of typhoid infection, but final proof of the presence of one of these bacteria and their relation to the disease can only be furnished by the detailed cultural and agglutination tests described later on.

Table I. shows the results obtained by the broth method. Cultures were made with this method from 25 suspected cases. Eighteen of these cases gave, subsequently, a positive Widal reaction. The *B. typhosus* was isolated from 4 of these cases; the broth was contaminated on three occasions by a *Staphylococcus*.

These results cannot be considered satisfactory, but from subsequent experience the low percentage of success was largely due, I think, to the very small amount of blood used (0·1 to 0·3 cc. as a rule). Contaminating bacteria, like the *Staphylococcus*, grow too readily in broth to make this a satisfactory medium for blood cultures.

TABLE I.

No. of Case	Name	Admitted to hospital	BLOOD EXAMINATION			Remarks
			Date of taking	Probable period of disease	Result	
1	Fitch.. ..	28.11.06..	30.11.06..	1st week	Positive. B.T.A.	Case of medium severity.
2	McCarthy..	20.11.06..	5.12.06..	3rd week	Negative	Severe case. Relapse. B.T.A. in urine.
3	Cook	17.11.06..	4.12.06..	3rd week	Negative	Case of medium severity. Relapse.
4	Benjamin (Kaffir)	3.12.06..	6.12.06..	1st week	Positive. B.T.A.	Severe case. B.T.A. isolated from blood.
5	Cleanboy (Kaffir)	3.12.06..	6.12.06..	1st week	Negative	Case of medium severity.
6	Dominey ..	11.12.06..	13.12.06..	1st week	Negative	Case of medium severity.
7	White	11.12.06..	13.12.06..	1st week	Contamination	Severe case.
8	Webb	13.12.06..	24.12.06..	2nd week	Negative	Case of medium severity.
9	Lydiat	20.12.06..	24.12.06..	1st week	Positive. B.T.A.	Case of medium severity.
10	Esplin	22.12.06..	24.12.06..	1st week	Positive. B.T.A.	Fairly severe case.
11	Barton	22.12.06..	24.12.06..	1st week	Contamination	Case of medium severity.
12	Hirons	26.12.06..	29.12.06..	1st week	Negative	Case of medium severity.
13	Price	27.12.06..	29.12.06..	1st week	Negative	Severe case.
14	Haines	27.12.06..	29.12.06..	1st week	Contaminated..	Case of medium severity.
15	Osprey	28.12.06..	4. 1.07..	2nd week	Negative	Mild case.
16	Cox, B.A.M.C.	28.12.06..	4. 1.07..	2nd week	Negative	Very medium case.
17	Cox,	28.12.06..	4. 1.07..	2nd week	Negative	Mild case. Inoculated twice.
18	K.O.Y.L.I. Davison ..	29.12.06..	4. 1.07..	2nd week	Negative	Fairly severe case.

Results Obtained by Blood Cultures made in Ox-Bile (Methods of Conradi and Kayser). Detail of Method.—This is similar in every respect to that used in the broth method, except that the blood drawn from the finger is placed in 2 to 5 cc. of sterile ox-bile. In Kayser's method, used in some of these cases, sterile ox-bile alone is employed, whereas Conradi recommends the addition of peptone and glycerine to the ox-bile (10 per cent. of each). The added peptone encourages the growth of typhoid bacilli if present, while the glycerine in the medium keeps down the growth of saprophytic bacteria. Conradi's method was employed in the majority of the cases.

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TABLE II.

No. of Case	Name	Date of admission to hospital	BLOOD EXAMINATION			Remarks
			Date of taking	Probable day of disease on which taken	Result	
1	Mingan ..	24.10.06..	27.10.06..	8th day..	Positive. B.T.A.	Case of medium severity. Clinically enteric.
2	Moore ..	24.10.06..	27.10.06..	12th day	Positive. B.T.A.	Case of medium severity. Clinically enteric. Admitted late.
3	Dickenson	8.11.06..	15.11.06..	12th day	Negative	Case of medium severity. Clinically like enteric.
4	Dry	8.11.06..	15.11.06..	End of 2nd week	Negative	Case of medium severity. Admitted late in disease. B.T.A. in urine.
5	Hartley ..	10.11.06..	16.11.06..	11th or 12th day	Negative	Mild case. Admitted late in disease.
6	Aitchenson	22.11.06..	26.11.06..	8th or 9th day	Positive. B.T.A.	Case of medium severity.
7	Hirons ..	27.12.06..	22. 1.07..	3rd or 6th day of relapse	Negative	Severe case.
8	Nevill ..	10. 1.07..	22. 1.07..	16th day	Negative	Case of medium severity.
9	Wells ..	21. 1.07..	23. 1.07..	10th day	Positive. Para A.	Severe case with a relapse.
10	Jackson ..	22. 1.07..	29. 1.07..	3rd week	Negative	Admitted late in disease. Mild enteric.
11	Russel ..	28. 1.07..	29. 1.07..	8th day..	Positive. Para A.	Severe attack followed by relapse.
12	Tolman ..	28. 1.07..	29. 1.07..	End of 2nd week	Negative	Mild case. Admitted late.
13	Hards ..	26. 1.07..	29. 1.07..	2nd week	Negative	Medium severe case.
14	Jamison ..	1. 2.07..	2. 2.07..	3rd or 4th day	Positive. B.T.A.	Severe attack. Admitted early
15	Price ..	27.12.06..	5. 2.07..	16th day	Positive. <i>B.coli</i> ?	Severe case followed by relapse
16	Ibbotson ..	20.12.06..	5. 2.07..	3rd week	Negative	Case of medium severity. Clinically enteric.
17	Tragenza ..	3. 2.07..	7. 2.07..	1st week	Positive. B.T.A.	Severe case. Died. B.T.A. afterwards isolated from spleen.
18	Milsom ..	5. 2.07..	7. 2.07..	2nd week	Negative	Case of medium severity.
19	Orange ..	10. 2.07..	13. 2.07..	1st week	Positive. Para B.	Mild case. Atypical clinically.
20	Mills ..	15. 2.07..	15. 2.07..	2nd or 3rd day	Positive. B.T.A.	Case of medium severity followed by a relapse.
21	O'Connor ..	26. 2.07..	28. 2.07..	End of attack, 16th or 17th day	Negative	Mild case, admitted late in disease.
22	Warne ..	27. 2.07..	3. 3.07..	12th day	Positive. B.T.A.	Clinically typical (thrombosis)
23	Wilson ..	28. 2.07..	5. 3.07..	Beginning of 3rd week	Negative from blood, positive from urine	A case of medium severity, admitted late in disease. B.T.A. isolated from urine.
24	Wright ..	19. 3.07..	19. 3.07..	3rd or 4th day	Positive. Para B.	Severe case. Hæmorrhage. Clinically like enteric.
25	Ward ..	1. 3.07..	5. 3.07..	1st week	Positive. B.T.A.	A case of medium severity.
26	Elmers ..	4. 3.07..	6. 3.07..	2nd week	Negative	Very mild case.
27	Nicholls ..	25. 3.07..	27. 3.07..	1st week	Positive. B.T.A.	Mild case. No complications.
28	Skinner ..	30. 3.07..	2. 4.07..	1st week	Positive. B.T.A.	Mild case. No complications.
29	Ainsworth	3. 4.07..	6. 4.07..	End of 1st week	Positive. Para B.	A typical, mild case.

TABLE II.—*continued.*

No. of Case	Name	Date of admission to hospital	BLOOD EXAMINATION			Remarks
			Date of taking	Probable day of disease on which taken	Result	
30	Radburn ..	5. 4.07..	7. 4.07..	8th day	Negative	Very mild case.
31	Talboy ..	11. 4.07..	13. 4.07..	End of 1st week	Negative	Mild case. Spots 11th day.
32	Squire ..	11. 4.07..	17. 4.07..	Beginning of 2nd week	Positive. B.T.A.	Mild case. Spots, herpes.
33	Goodwin ..	14. 4.07..	17. 4.07..	1st week	Positive. B.T.A.	Severe case, hæmorrhage from bladder, followed by acute cystitis. Infarct in kidney. Staphylococci isolated also. Died.
34	Brown ..	15. 4.07..	24. 4.07..	2nd week	Negative	Case of medium severity.
35	Rogan ..	27. 4.07..	30. 4.07..	1st week	Negative	Case of medium severity.
36	Boyle ..	30. 4.07..	4. 5.07..	8th or 9th day	Positive. Para A.	Case of medium severity.
37	Parkins ..	3. 5.07..	7. 5.07..	8th or 9th day	Negative	Severe case. Died, perforating ulcer. B.T.A. isolated from spleen.

It will be seen from the above table that bacteria of the typhoid-coli group were isolated from 19 of the 37 cases. Contaminating bacteria were present on four or five occasions. The high percentage of success obtained by this method cannot be attributed solely to the use of the bile, for the amounts of blood removed from the finger were, on the average, greater (0·3 to 0·4 cc.) than when the broth method was being employed.

Nature of the Bacteria isolated from the Blood Cultures.—An endeavour was made to determine the nature of every typhoid-like organism isolated from the blood cultures, and to this end the following strains were put to various cultural and agglutination tests: 4 bacteria isolated from 18 cases by the broth method; 19 bacteria isolated from 37 cases by the ox-bile method; 3 strains obtained, 1 from a spleen (*post mortem*) and the 2 others from samples of urine, all from cases in which blood cultures had proved negative. The tests applied to these 26 strains were made not only to establish the nature of each organism, but also its relation to the disease produced in the patient; they included:—

Cultural Tests.—Bacteria-forming typhoid-like colonies on the agar plates, and which further resembled typhoid bacteria morphologically, were sub-cultured on to: (1) Ordinary agar slopes; (2) neutral red glucose agar; (3) litmus milk; (4) a mannite-nutrose-litmus solution containing a gas capsule. The last three media at

once serve to detect whether one is dealing with a typhoid bacillus or one of the types of paratyphoid bacteria. Further tests on malachite-green agar, and agar media containing lead sub-acetate and nitro-prusside of soda, were occasionally employed, but are not essential.

Serum Tests.—The nature of the bacterium isolated was further determined by testing it against various dilutions of animal sera, obtained by inoculating animals against (1) the typhoid bacillus; (2) the paratyphoid bacillus type A; (3) the paratyphoid bacillus type B. These three sera were very kindly sent me by Lieutenant-Colonel Leishman, R.A.M.C., from the Royal Army Medical College Laboratories.

By testing these sera against strains of typhoid bacteria in the laboratory here, and against a paratyphoid bacillus type B, kindly sent me by Dr. McRae, of Johannesburg, two months ago, I found they agglutinated: (1) The typhoid bacillus (J) up to a dilution of 1 in 1,000; (2) the paratyphoid bacillus (B) up to a dilution of 1 in 1,500. A paratyphoid bacillus type A sent me by Dr. McRae, of Johannesburg, was found to pseudo-agglutinate, so I am not certain what the strength of the anti-paratyphoid (A) serum with reference to this strain was. Lieutenant-Colonel Leishman, however, when sending me the sera, informed me that the paratyphoid (A) serum agglutinated a paratyphoid (A) bacillus up to 1 in 1,000 (higher not tested).

Relation of the Bacillus to the Disease.—To ascertain whether the bacteria isolated from the blood of patients was the cause of the disease, these bacteria were tested against various dilutions of the blood sera of these patients. Of the 26 bacteria isolated and tested by these methods 19 strains gave the cultural reactions of the *B. typhosus*, i.e.: (1) No alteration in glucose neutral red agar; (2) a mannite-litmus solution was turned pink, but no gas was formed in this medium; (3) little or no change was produced in litmus milk.

The reactions in litmus milk, however, showed that the typhoid bacillus does not leave this media entirely unaffected. During the first two or three days a slight acid reaction was produced by most of these strains. This acidity persisted in many of the cases; in others, the milk became neutral or slightly alkaline after two or three weeks; in 1 case the litmus milk became dark blue and markedly alkaline after the third week, the reaction closely resembling that produced by the *B. paratyphosus* B.

The results obtained by culture methods were confirmed by agglutination tests, for in all cases these 19 strains gave, at some

TABLE III.—MORPHOLOGICAL AND CULTURAL CHARACTERS OF THE ATYPICAL BACTERIA ISOLATED.

Name	Mor- phology	Endo-agar plates	Agar	Broth	Glucose broth	Neutral red glucose agar	Litmus milk	Mannite- nitrore-lit- mus solution	Indol	Malachite green agar	Sodium nitro-prus- side agar	Lead sub- acetate agar	Remarks
Ainsworth		Colonies have a pink cen- tre and clear margin	Thick grey growth	Uniform turbidity	Gas formed	Gas and fluores- cence	Acidity ; red- dish colour followed by marked alka- linity, deep blue after sixth day	Turns red ; gas found freely in twenty- four hours	None found	Decolour- ised in twenty- four hours	Vivid green colony along the stab in forty-eight hours	Slight blackening of media in four days	Para- typhoid B bacillus
Orange ..		Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto
Wright ..		Pinkish colonies	Ditto	Ditto	Ditto	Slight gas and fluor- escence, disappear- ing in five or six days	Very little change, a slight acidity	Red ; gas slowly formed, third or fourth day	Ditto	Slowly decolour- ised, forty- eight hours	Slight green in four days	No colour pro- duced	Culturally like Para. A (see agglutina- tion results)
Boyle ..		Ditto	Ditto	Ditto	Ditto	Ditto	Slight per- manent acidity (red- dish)	Ditto	Ditto	Ditto	Ditto	Ditto	Para- typhoid A
Russel ..		Ditto	Ditto	Slight scum	Ditto	Ditto	Little change	Red ; no gas in five days	Ditto	Ditto	Ditto	Ditto	Ditto
Wells ..		Ditto	Ditto	Uniform turbidity	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto
Price ..		Reddish colonies	Ditto	Ditto	Much gas formed	Abundant gas and permanent marked fluores- cence	First decolourised, then coagu- lated on fourth day	Red ; much gas	Yes, slight in twelve days	Ditto	Green streak in forty-eight hours	Not tested	One of the colon group

period after isolation, a positive agglutination reaction against an anti-typhoid test serum (in a dilution of at least 1 in 200). That these 19 strains were in each instance the cause of the patient's attack of typhoid was proved by their agglutination by the blood sera (in high dilutions) of those cases from which they had been isolated. Agglutination tests produced many difficulties, for while the freshly isolated bacteria were found difficult to agglutinate either with a patient's or a standard animal serum—when such bacteria became more agglutinable by growth on media—the serum of the patient had largely lost its agglutinating power. Owing to these facts the best agglutination results between the bacillus and the patient's serum were usually obtained in the second month after isolation of the organism from the blood.

The remaining 7 strains isolated from the blood proved, when tested by cultural and agglutination reactions, to belong not to the typhoid group, but to the allied paratyphoid and paracolon bacteria. Their cultural and agglutination reactions are given in detail in Tables III. and IV.

The cultural tests given in Table III. appear to show that the bacteria isolated from Ainsworth and Orange belong to the *B. paratyphosus* B group; that those isolated from Wells, Russel, Boyle and Wright, as far as their cultural reactions at least are concerned, might be classed with the *B. paratyphosus* type A bacteria. The bacillus isolated from Price is one of the colon group.

In Table IV. are given the agglutination reactions of the 7 atypical bacteria isolated from the blood.

The results of the agglutination tests shown in Table IV. confirm the culture tests in all cases except one.

Strains Ainsworth and Orange are shown by their agglutinating reactions to belong to the *B. paratyphosus* B group; Strains Boyle, Wells and Russel are likewise shown to belong to the paratyphoid A group of bacteria. The strain "Wright," which culturally resembles the paratyphoid (A) group more than the paratyphoid (B), agglutinates more readily with the paratyphoid (B) standard sera. Further work must be undertaken before the exact nature of this strain is determined.

Concluding Remarks.—The method of diagnosis by cultures from the blood appears to offer a simple and accurate means of diagnosing diseases of a typhoid nature. The bile method of Conrad and Kayser, if carefully followed, should yield a very high percentage of successful results. Using but very small amounts of blood (0.3 to 0.4 cc.) I obtained 52 per cent. of positive results by

this method in the first series of cases examined. With somewhat larger amounts of blood (0.5, or 1 cc.) the 80 per cent. and more of successful results obtained by Conradi and Kayser should be

TABLE IV.—AGGLUTINATION REACTIONS OF THE SEVEN ATYPICAL BACTERIA ISOLATED.

Name of patient from whom isolated	Tests of agglutinability of bacilli isolated against serum of patient from which isolated	Agglutinability of bacilli against standard sera, prepared by collecting the blood sera of animals immunised against paratyphoid bacilli (Strength of sera = 1 in 1,500)
Russel ..	Two days after isolation, highest dilution in which agglutinated was 1 in 50. Highest agglutination results attained two months after isolation = 1 in 300; from this date agglutination curve steadily fell	Agglutinated by a paratyphoid A serum in a 1 in 50 dilution when first isolated, now agglutinated by a 1 in 1,000 dilution of paratyphoid A serum.
Price ..	Strain isolated, 27.12.06; agglutination two days later, not higher than 1 in 30 dilution. Highest recorded, 1 in 200 three months after isolation of bacillus	Does not agglutinate with any of the paratyphoid sera.
Wells ..	Isolated, 21.1.07; no agglutination when treated two days later. Highest agglutination recorded was against a 1 in 300 dilution of his own serum two months after isolation of the bacillus	Did not agglutinate at first with any paratyphoid serum. A fortnight after commencement of sub-culturing agglutinated in a 1 in 100 dilution of paratyphoid A serum; is now agglutinated by a 1 in 1,000 dilution of paratyphoid A serum.
Orange ..	Isolated, 10.2.07; agglutinated when first isolated in a 1 in 60 dilution. Highest agglutination recorded with his own serum = 1 in 400, one month after isolation	Agglutinated in a 1 in 100 dilution of paratyphoid A serum when first isolated, now agglutinates a 1 in 1,000.
Wright ..	Isolated, 19.3.07; agglutinated in a 1 in 30 dilution when first isolated. Highest recorded = 1 in 800, one month later (26.4.07)	Gave a positive agglutination reaction in a 1 in 50 dilution of both paratyphoid A and B sera, now agglutinates in a 1 in 300 dilution of paratyphoid B serum and in a 1 in 100 dilution of paratyphoid A serum.
Ainsworth ..	Isolated, 6.4.07; agglutinated in a 1 in 200 dilution of his own serum when isolated. Highest agglutination recorded found on 25.4.07 = 1 in 800	Agglutinated in a 1 in 200 dilution of paratyphoid B serum when first isolated, now agglutinates in a 1 in 1,500 dilution of paratyphoid B serum.
Boyle ..	Isolated, 4.5.07; agglutinated in a 1 in 300 dilution when first isolated. Highest agglutination recorded was 1 in 1,000 a fortnight later	Agglutinated in a 1 in 300 dilution when first isolated and now agglutinates in a 1 in 1,000 dilution.

attained. Of 26 strains of bacteria isolated from patients (23 from the blood), 19 proved to be the *B. typhosus*, 2 strains (Ainsworth and Orange) were paratyphoid bacteria type B, while 3 strains (Russel, Wells and Boyle) can be grouped under the

paratyphoid bacilli type A. The strain "Wright" has not yet been fully worked out. The strain "Price" is probably a colon bacillus. It is evident that in South Africa atypical bacteria of the paratyphoid, paracolon and colon varieties play an important rôle in the production of typhoid-like disease.

Clinically it appears difficult, even impossible, to distinguish between disease produced by the typhoid bacillus and other bacteria of the typhoid-colon group. Of 5 cases of typhoid occurring after inoculation, 2 cases (Ainsworth and Orange) suffered from disease produced by the paratyphoid bacillus type B.

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A NOTE ON BLACKWATER FEVER IN SIERRA LEONE.¹

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DURING the year 1905, ten cases of blackwater fever occurred amongst the garrison of Sierra Leone. The strength of the troops was as follows: 238 Europeans, 2,048 West Indians and natives of West Africa. All the cases occurred amongst the men of the 2nd West India Regiment, who were in their third year of West African service. They arrived from Jamaica in 1902.

Their previous history showed that all had had attacks of malaria. The medical history sheets of six out of ten showed entries for malarial fever while serving in Jamaica, besides admissions for malaria in Sierra Leone. In eight out of ten, quinine had been administered previous to the onset of blackwater. I do not propose to give a clinical description of these cases, but will say a few words about two of them. The first was that of Private Mathews, which was the most severe case which recovered. His medical history sheet showed eight previous admissions for malarial fever. The onset of the disease was explosive in character. Ten grains of quinine were given in the morning, and hæmoglobinuria came on at 2 p.m. The following day he was restless and was vomiting incessantly. The conjunctivæ were jaundiced. In the evening the jaundice was more marked. He lay with his eyes half closed and was very drowsy. The vomiting still continued and he had had no sleep the previous night. His condition was worse on the third day. On the fourth day he was *in extremis*. The red cell count was 1,470,000 and the hæmoglobin 30 per cent. Twenty-four hours later, the pulse could only be felt every second beat at the wrist, and the vomiting had not ceased. Bile pigment was present in the urine for the first time. On the eighth day the red cells were 1,107,000 per c.mm., the hæmoglobin 25 per cent., and the leucocytes 13,800. The blood was examined daily for thirteen days; no malarial parasites were seen. No examination of the blood had been made previous to the onset of hæmoglobinuria. Convalescence was very prolonged. On the thirty-seventh day the red cells were 3,250,000 and the hæmoglobin 63 per cent. The patient recovered and was discharged to duty after being in hospital

¹ Read before the Pathological Society of London, March 19th, 1907, when blood films showing malarial parasites from some of the cases were shown.

over three months. I will now pass on to a brief description of a case that ended fatally.

Private Willock was admitted to hospital with blackwater fever on September 15th. There was no evidence that he had taken any quinine for ten days previous to the onset of hæmoglobinuria. He had been on furlough in a Creole village near Sierra Leone. He had fever for four days before admission, and he treated himself with what he called "bush tea," which is a native diaphoretic medicine prepared from a local plant. He died from suppression of urine on the eleventh day. The following amount of urine was passed every twenty-four hours. On the first day, 6 ozs.; the second day, *nil*; the third day, *nil*, three drams only were withdrawn by catheter. On the fourth day, 6 ozs., then 3, 3, 2½, 2½, 7 and 10 ozs. respectively every twenty-four hours up to the tenth day. A blood count on the sixth day showed 1,800,000 red cells, 20 per cent. of hæmoglobin and 12,000 leucocytes. The differential count gave 71·5 polynuclears, 24 per cent. lymphocytes, 4·5 large mononuclears and no eosinophiles.

Malarial parasites were present in the peripheral blood of (36 per cent.) four out of eleven cases. Unfortunately no examinations of the blood were made before the onset of blackwater. In one patient the parasite was present on the second and third day, and reappeared on the ninth and tenth days. I also found a malarial parasite in the blood of a European civilian who died from blackwater.

The parasites were usually very few in number and difficult to find. Young forms only were seen, without any pigment. I never found any sexually-mature parasites, and crescents were never seen. Blood taken by spleen and liver puncture during life was negative. I counted the red cells fifteen times and estimated the hæmoglobin with Gowers' apparatus on fourteen occasions. I have shown that the destruction of red cells and loss of hæmoglobin is very marked in a severe case. The blood regeneration takes place fairly rapidly in a comparatively mild case. For example, Private Lovell's blood count on the fifth day gave 3,700,000 reds, with 70 per cent. of hæmoglobin, and on the twenty-third day the reds had risen to 4,990,000, with 96 per cent. of hæmoglobin.

In two fatal cases the hæmoglobin fell to 20 and 28 per cent. respectively. The colour index was usually low, ranging from 0·9 to 0·7. This, however, was not invariable; in one case the index varied from 1 to 1·5. The ratio between the percentage of hæmoglobin and red cells does not necessarily represent the true corpus-

cular richness, as the hæmoglobin which has left the red cell, but is still present in the serum, is taken into account. Normoblasts were present in scanty numbers in two patients. Shadow corpuscles, irregular forms and microcytes are common, while megalocytes were noted during convalescence. An absolute polynuclear leucocytosis occurs with the onset of hæmoglobinuria, and later on if suppression of urine threatens. 13,800 leucocytes per c.mm. was the highest count noted; this with 84 per cent. of polynuclears gives 11,592 polynuclears per cubic millimetre. Eosinophilia was present in some cases, but was explained by the presence of the ova of the *Ankylostomum duodenale* in the stools.

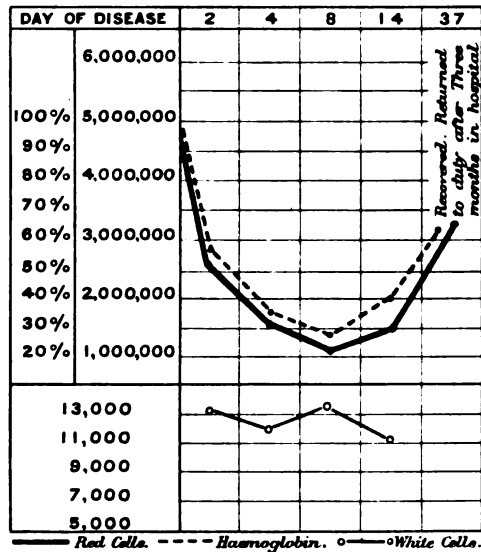
The duration of hæmoglobinuria varied from thirteen to ninety-six hours, the average being about thirty hours.

Albuminuria usually persists for some days after the hæmoglobinuria has ceased. In some cases the albuminuria ceases very abruptly; for example: $\frac{1}{4}$ albumen on the second day, a trace on the third, with *nil* on the fourth and subsequent days. In another instance, $\frac{1}{8}$ on the second day, $\frac{1}{10}$ the third day, with none on the fourth and following days.

Ova of the *Ankylostomum duodenale* were present in the stools of 50 per cent. of the cases. I at first thought that there was some connection between the presence of the ankylostomum and the occurrence of blackwater. The geographical distribution of malignant malaria and ankylostomiasis on the one hand, corresponds closely with the distribution of blackwater fever. I found that about 25 per cent. of the non-commissioned officers and men of the West India Regiment harboured ankylostomes.

I will now pass on to the *post-mortem* appearances of the case of Private Willock. The examination was commenced two hours after death. Body well nourished. *Rigor mortis* marked. *Liver*.—Weight 51 ozs., engorged with blood, substance firm. *Gall bladder* distended with bile. *Spleen*.—Weight $7\frac{1}{2}$ ozs., substance of a peculiar mauve colour. *Mesenteric glands*.—Very numerous and enlarged. The largest glands were in the vicinity of the upper part of the jejunum. *Stomach* contained 4 ozs. of bile-stained fluid, walls coated with mucus. Mucous membrane congested, several punctiform hæmorrhages noticed. Small intestine contained no faecal matter. The walls were covered with thick tenacious mucus. The mucous membrane of the duodenum was congested, and the congestion was more marked in the upper portion of the jejunum. The external surface of the intestine was normal. The cæcum was congested, but the rest of the large intestine was

normal. No entozoa found. *Kidneys* weighed $11\frac{1}{2}$ and $11\frac{1}{4}$ ozs. respectively. Capsule stripped easily; surface covered with punctiform hæmorrhages; pyramids acutely congested; the organ was full of blood. *Bladder* contained 3 ozs. of clear urine. *Lungs* collapsed, weighed $8\frac{1}{2}$ and $7\frac{1}{2}$ ozs. Right lung adherent to diaphragm, left lung adherent to chest wall. *Heart* weighed $11\frac{1}{2}$ ozs., substance firm; left ventricle contained three clots which showed signs of commencing organisation. The other cavities contained clots. All the valves were normal. Slight roughening of the aorta $\frac{1}{2}$ an inch above the valves. *Brain and membranes*



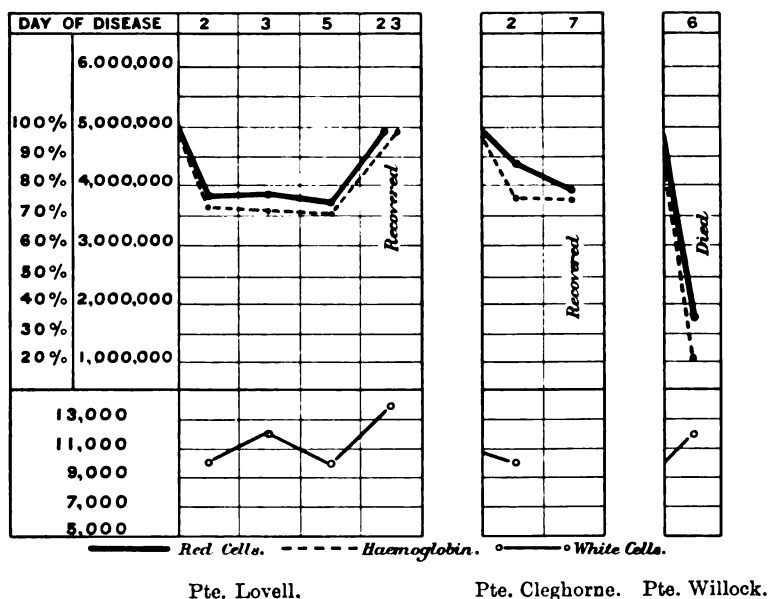
Pte. Mathews.

appeared normal. The *bone marrow* in the shaft of the humerus was of a lemon-yellow colour. Smears from the brain, liver and spleen showed no malarial parasites or pigment; a diminution in the number of nucleated red cells was noted in smears from the bone marrow. Sections of the kidney showed an intertubular round cell infiltration, with cloudy swelling of the cells lining the tubules. Many of the tubules were blocked with broken-down granular material. No malarial pigment was seen.

Unfortunately, the bottles containing the tissues got broken when going through the customs at Plymouth, so I was unable to make any further examination.

Blood taken during life was injected into the peritoneum of guinea-pigs with a negative result. *Post-mortem* material, such as emulsions of spleen, liver and mesenteric glands, were injected into the peritoneum of monkeys and guinea-pigs, without throwing any further light on the nature of the disease.

A small Gram-negative bacillus was isolated from the urine in one case. After twenty-four hours on agar at 37° C. no growth could be seen; after forty-eight hours a delicate growth was visible which resembled that of a *Streptococcus*. A monkey received a large intraperitoneal dose with apparently little discomfort.



No bacteriological examinations of the blood were made.

As regards the theory that the disease is due to quinine intoxication: blackwater fever is rare in the Army in India in comparison with Tropical Africa, yet quinine is a drug that is in daily use in both countries. During six years in India and Burma I never saw a case of blackwater fever or suppression of urine. It is conceivable that hæmoglobinuria might be overlooked, but suppression of urine could hardly occur unnoticed.

In conclusion, the evidence points to the disease being of malarial origin, the reasons being a previous history of malaria

TABLE.

Case No. Privates ..	1 Beck- ford		2 Howell		3 Lovell				4 Mathews				5 Clegborne		6 Willock	7 Liley (Civilian)
	May 11	May 19	May 20	June 6	June 13	June 14	June 16	July 9	June 24	June 26	June 30	July 6	July 29	July 26	July 30	Sept. 20
Date, 1905 ..	5	2	3	20	2	3	5	23	2	4	8	14	37	2	7	6
Day of disease ..																
Polynuclears ..	43.5	..	61	..	75	66	53	..	..	84	..	75	..	53	..	71.5
Lymphocytes ..	43	..	25	..	20.5	30	44	..	..	12.5	..	23	..	29	..	24
Large mononuclears	6	..	5	..	3.5	3	1	..	..	3	..	2	..	13	..	4.5
Eosinophiles ..	7.5	..	9	..	1	1	2	..	..	.5	..	0	..	5	..	0
Hæmoglobin %	..	..	..	72	75	70	70	96	55	30	25	40	63	73	73	20
Colour index ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Red blood corpuscles	4,260,000	4,900,000	..	3,828,000	3,300,000	3,800,000	3,700,000	4,998,000	2,500,000	1,470,000	1,107,000	1,346,000	3,250,000	4,265,000	3,900,000	1,800,000
White blood corpuscles	..	10,000	..	4,400	10,000	12,000	9,549	14,900	13,000	12,000	13,800	11,000	..	9,560	..	12,000
Duration of hæmoglobinuria, hours	13*	30*	..	..	..	36	..	..	..	..	96	..	..	32*	Un- certain; present 1st and 3rd days	(?) No examina- tion of stool

* Ova of the *Ankylostomum duodenale* present in stool.

in every case, and the presence of a parasite in the blood of a considerable number of cases. Secondly, the disease is probably due to a special form of malarial parasite, allied to, but distinct from, the parasite of malignant tertian. No pigment was ever found in any of the parasites in the peripheral blood or organs. Instead of forming pigment it may form some other toxic substance, which may be the exciting cause of the hæmolysis. Thirdly, the disease does not affect new comers. No cases occurred in the European battery up to ten months after their arrival in Sierra Leone, while cases were not uncommon amongst the negroes of the West Indian Regiment who were quartered in the same barracks and had been from two to three years in Sierra Leone. Fourthly, anti-malarial measures, such as the proper use of mosquito nets and the systematic treatment of cases with quinine, &c., will reduce the number of cases of blackwater fever in proportion as they reduce the number of cases of malaria.

SURGICAL REPORT FOR THE ROYAL ARSENAL, WOOLWICH. YEAR, 1905-6.

BY LIEUTENANT-COLONEL S. F. LOUGHEED, C.M.G., AND MAJORS J. C.
JAMESON, E. M. PILCHER, D.S.O., AND H. N. DUNN.

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OFFICERS who are interested in surgery cannot fail to have been struck by the improvement in the nature and scope of operative work in the Army within the last few years. The accounts of cases which find their way into our Journal go some way to establish this fact, but it is after all only from detailed reports of routine work that a satisfactory judgment can be formed. To the curious in such matters information full and complete can doubtless be gained from official reports and case-books, but we think it desirable that a popular (if we may use the term) and interesting account of important cases, of surgical technique, as carried out in various centres, of results, and above all of personal opinions, should occasionally be sent to the Journal, so that the Service generally may be aware of what is being done, profitable discussion encouraged, and a healthy rivalry established. With this end in view we have prepared the following brief account of our surgical experiences during the year 1905-6, at the Royal Arsenal, Woolwich.

During the past year (1905-6) 166 operations were performed, contrasting with 88 for the year 1903-4, and 56 for the year 1904-5, and we hope to prove that the present year shows an increase not less in interest and importance than in the number of the operations performed. Possibilities for surgical work have been much enlarged since 1904 by the advent of the nursing sisters. Before these ladies came, surgeons at the Royal Arsenal were to some extent deterred from undertaking serious surgical procedures from disinclination to expose their patients to the risk of possibly indifferent, though well-intentioned, after-treatment and of septic infection; for it must be acknowledged that even trained nursing orderlies cannot be quite trusted to carry out the necessary, but often petty and wearisome, details of antiseptic preparation and procedure.

From a study of the operations performed it is plain that the possibilities above referred to have by no means exhausted even the region of general surgery. In those departments which are usually considered to belong to the specialist a fruitful field lies open, especially as regards the surgery of the eye, and of the throat, nose and ear.

The small number of beds available places, at present, a limit to

surgical expansion. More space has, however, been promised; but at present twenty beds are available, and of these a certain proportion must always be kept empty for accidents. Moreover, accident cases occupy beds longer than do ordinary successful operation cases on an average, a fact especially true in the case of burns, of which we see a fair number. Fifteen beds for general surgery is no excessive provision for so large an establishment as the Royal Arsenal, the medical department of which has in truth outgrown its accommodation. This result is, of course, due in great measure to that widening of the limits of surgical interference in what were formerly considered medical cases, with which we are all familiar. Indeed, our experience has been that of all other hospital establishments.

Of the 166 cases of operation, 32 were for injury and 134 for disease. The proportion of disease to injury, therefore, is more than as four to one, and seems to justify the setting aside of no more than five out of twenty beds for cases of accident.

The following list gives the nature and number of the operations performed :—

(1) Trephining for injury to cranium.. ..	1
(2) Removal of parotid tumour	1
(3) Enucleation of eyeball	2
(4) Removal of new growths from the face	2
(5) Stacke's operation for otitis media	1
(6) Extraction of carious teeth.. ..	1
(7) Removal of glands and cysts of neck	4
(8) Amputation of fingers and cellulitis of hand	6
(9) Injuries and diseases of forearm and arm	15
(10) Diseases of thoracic and abdominal parieties	4
(11) Laparotomy for appendicitis	18
(12) Radical cure of hernia	19
(13) Gastro-enterostomy	3
(14) Cholecystostomy	1
(15) Suture of perforating ulcer of stomach	1
(16) Urethrotomy for stricture of urethra	4
(17) Lithotomy	3
(18) Operation for varicocele	4
(19) Operation for hydrocele	5
(20) Drainage of inguinal abscess	2
(21) Circumcision	1
(22) Removal of hæmorrhoids	29
(23) Operations on fistula and ischio-rectal abscess	9
(24) Operations on fissure of the anus	4
(25) Removal of growths round the anus	2
(26) Diseases and injuries of the lower extremity	15
(27) Operations on varicose veins	9
Total	166

Anæsthetics were administered 166 times, happily without any casualties. Ether alone was given 89 times, Clover's inhaler being used in all cases. Chloroform alone was given 62 times, the method employed varying with the personal taste of the administrator. In the majority of cases the open method was used, but in a certain proportion Junker's inhaler was used, and a trial was made of a new inhaler, introduced to the profession recently by Mr. Vernon Harcourt. The general opinion of this inhaler seems to be that it is very slow in inducing anæsthesia and perhaps somewhat uncertain in maintaining it, but a further trial may demonstrate its superiority. Chloroform followed by ether was given in five cases, eucain in one case, and in nine the nature of the anæsthetic is not stated.

Some of the more interesting of these cases are described below.

(1) *Trephining for Injury to Cranium* (Lieutenant-Colonel Loughheed).—G. G., aged 19, had a fall on a kerbstone in the streets of Woolwich on February 16th, 1905, receiving a contused wound in the right temporal region, in front of and above the ear. No fracture was detected at the time and the wound healed without trouble in a fortnight. He was admitted into hospital on April 12th, 1905, complaining of pain in the region of the scar. He had had fits occasionally for the past three weeks, which began as a tremor in the left hand and went on to unconsciousness. He was dull and incapable of mental work. The scar was adherent to the bone beneath, but not tender to the touch. On April 12th the scalp was reflected backwards by a semi-lunar incision, exposing a slight depression beneath the old scar. A disc of bone was removed which was a quarter of an inch thick and adherent to the dura mater. The opening in the bone thus made was enlarged with a Hoffmann's gouge, and the dura was incised in a T-shaped manner and found firmly adherent to the cerebral cortex. The vessels at this point were numerous and congested. The adhesions between meninges and cortex having been separated fully, the incision in the dura was closed by a few interrupted silk sutures. The disc of bone was not replaced. The scalp was united by silk-worm gut, without drainage. Union occurred *per primam* and he had no more fits for some months. His mental condition improved markedly and he could converse quite intelligently, and stated that he felt quite well. This improved condition lasted about six months, when he again relapsed into his former condition of headaches with Jacksonian seizures. These commenced simultaneously

in the left arm, leg, and side of face. It was not considered advisable to interfere surgically again.

(2) *Removal of a Rodent Ulcer* (Lieutenant-Colonel Lougheed).—W. D., aged 59, had a rodent ulcer of some years' standing at the outer canthus of the left eye. The growth involved the outer half of the lower lid and about one-eighth of an inch of the upper lid, and was about seven-eighths of an inch in its greatest length and about three-quarters of an inch across. An incision was first made round the growth and about a quarter of an inch from it, and the growth removed. It was free from the tarsal cartilage. A flap was then cut and its edge along its concave margin united to the cut edges of the skin and conjunctiva at the free margin of the eyelid. The convex margin was fixed by one or two sutures without tension, and the whole healed soundly by first intention.

(3) *Stacke's Operation for Otitis Media* (Major Pilcher).—W. D., aged 28, had had a discharge from the right ear for many years past. Pus had burrowed into the space behind the angle of the jaw, in which situation an abscess had formed and was opened, leaving a discharging sinus. The pus was very foul. On examination, nothing could be seen but granulations, the membrana tympani and ossicles having completely disappeared. The ear was turned forward by the usual incision behind the pinna, and the antrum exposed as a very small cavity after chiselling through very dense bone. The cavity was opened into that of the tympanum, which latter space was thoroughly curetted. The lining of the external auditory meatus was split and packed backwards into the large common cavity formed as above. There was much troublesome oozing from the mastoid vein. Healing was slow, owing, no doubt, to the density of the bone, but the case did well subsequently. The hearing was considerably improved.

(4) *Removal of Glands and Cysts of the Neck*.—As usually happens, these operations depended for their interest upon the operative and dissectional difficulties encountered. The history, progress and termination presented nothing unusual. Two were performed upon the same individual, an old man of 53, the glands being tubercular. He also had a fistula in ano of an intractable kind, probably due to the same cause. The glands had suppurated and lay along the course of the internal jugular vein, from the wall of which they were peeled by a cautious dissection. Healing was prolonged. Another case had a mass of glands removed from the upper part of the neck behind the angle of the jaw. The fourth was a large cyst containing pus on the right side of the neck, the

walls of which were very thick and intimately adherent to surrounding parts. It was removed, as well as a small cyst on the left side of the neck, and healing was uneventful.

(5) *Amputation of Fingers and Cellulitis of Hand*.—Of these operations eight were for spreading cellulitis of the hand and forearm, following a septic wound opening one of the sheaths of the flexor tendons. Prolonged and careful massage, after healing, restored a satisfactory amount of use to the fingers in most cases. But at the best these cases are far from satisfactory. Our experience is that they most often occur in middle-aged men with albuminuria or of an alcoholic habit, and that such cases present almost insuperable obstacles to the limiting of the spread of infection and to subsequent healing with a useful member. Of the remaining cases, six were amputations of fingers for crushes, and the last an attempt to set free a nerve involved in the scar of a crushed finger, which was causing severe pain. The attempt was unfortunately unsuccessful, and the finger was eventually amputated.

(6) *Injuries and Diseases of Forearm and Arm*.—Two of these cases were injuries to the shoulder-joint; an anæsthetic being given in one case to reduce a dislocation, in the other to break down adhesions. A third case had two operations performed upon it. The first was for the opening and draining of a large abscess in the axilla. There was a good deal of contraction and puckering of the scar, and as the man complained of pain down the arm on the inner side, and it was thought that some filaments of the intercostal humeral nerve were involved, the scar was removed at a second operation with the scar tissue lying immediately below it, and all contracted bands divided. The fifth operation was for the removal of an exostosis near the lower end of the right radius. The patient, a lad of 15, had had a separation of the lower epiphysis of the radius a year before, with premature union of the epiphysis and consequent arrest of growth of the radius. The exostosis was successfully removed with a chisel. The sixth case was a very unusual form of dislocation of the left elbow joint, the radius and ulna being completely displaced inwards and the prominent inner edge of the trochlear surface of the humerus presenting an almost insuperable obstacle to reduction. The man had been caught by the hand in a revolving band and carried up to the pulley over which the band passed. When he reached this point the hand and arm received a sudden twist as the band passed over the pulley, and he was set free with a dislocated elbow. Reduction was effected by manipulation

under chloroform after the exertion of a considerable amount of force. The subsequent progress of the case was good, a freely movable joint resulting.

(7) *Laparotomy for Appendicitis*.—Of the eighteen cases dealt with, Lieutenant-Colonel Lougheed operated upon eight, and of these he writes as follows: "Of these cases seven were operated upon in the cold stage, usually after the subsidence of the second attack. If any tumour could be felt the usual procedure was to cut down upon it by an oblique incision parallel with the fibres of the external oblique muscle and about $1\frac{1}{2}$ inches internal to the anterior superior spine of the ilium. The aponeurosis of this muscle was split up and the internal oblique and transversalis divided in the same direction. In cases where no distinct tumour was present the skin incision was made parallel with the outer border of the rectus muscle. The anterior layer of the rectus sheath having been divided to the full extent of the skin wound, the belly of the rectus was drawn inwards towards the middle line and the posterior layer divided in a similar way to the anterior. The peritoneum was also opened vertically and its cavity thus reached. When the peritoneal cavity was opened and no pus found, the meso-appendix was ligatured and divided up to the base of the appendix. The appendix was then crushed about half an inch from its base, ligatured and removed. The mucous membrane of the stump was usually touched with a red hot needle or with a drop of pure carbolic acid, and the stump was buried in the cæcal wall by a purse-string suture and returned into the abdomen. The peritoneum and abdominal muscles were united in separate layers by silk sutures and the skin closed by silkworm gut. In cases where pus was found, it was removed on dry sterile swabs, great care being taken to protect the peritoneum from soiling by packing, and a gauze drain was inserted for forty-eight hours. This was then removed and the wound usually healed in about a week. In none of these cases was the pus cavity irrigated by any antiseptic, this proceeding being considered inadvisable, owing to the danger of diffusing septic matter over the peritoneum, and of increasing the risk of septic absorption and general peritonitis. In two of these cases considerable difficulty was experienced in removing the appendix on account of its being situated behind the cæcum, its distal extremity reaching high up behind the ascending colon, to the wall of which it was firmly bound by old adhesions. In three cases faecal concretions were found in the appendix, one of them being of large size. In one case the lumen of the appendix was stenosed

in two places. In most of them the walls were much thickened and the mucous membrane swollen and ulcerated in spots. One case was operated upon in the hot stage about twenty-four hours after the onset of symptoms. It was of a fulminating nature, and, although no pus was found, about $1\frac{1}{2}$ inches of the distal end of the appendix were deeply congested and almost gangrenous. It was amputated and treated by the invagination method, and made an uninterrupted recovery. All these eight cases made a sound recovery with practically no rise of temperature, and were, after a period of convalescence, discharged to duty. In no case up to the present time has there been any sign of a hernial protrusion through the scar."

Colonel Lougheed's general remarks apply equally to the remaining ten cases, which were dealt with by Majors Jameson, Pilcher and Dunn, and it is only necessary to add as regards the cases individually: (1) That the vertical incision through the outer border of the rectus was used in seven cases. (2) That pus was found in five cases, in all of which the appendix was removed after careful removal of the pus on dry swabs. One of these cases died on the fourth day after operation from heart failure. This case was one which presented great difficulties in diagnosis, the only objective sign being rigidity of the right rectus muscle. An abscess was found deep down in the pelvis. (3) That in one case tubercular glands were found in the mesentery, and the appendix was found firmly bound down behind the cæcum, surrounded by an abscess containing curdy pus. There can be no doubt that this was a case of tubercle of the appendix. The abscess was drained and no attempt was made to separate the appendix. The man improved considerably on medical treatment, but a sinus remains. (4) That one case had reached the desperate condition of general peritonitis due to perforation of the appendix. The abdomen was opened, the appendix removed, and the whole abdominal cavity thoroughly washed out, gauze wicks being inserted in various directions. He died on the fifth day after the operation.

(8) *Radical Cure of Hernia*.—Eighteen cases were operated upon, in one of which, unfortunately, suppuration took place, and a second operation was performed to remove the stitches. The operation usually performed was Bassini's, the aponeurosis of the external oblique being split up as far as the internal ring, the sac isolated from the structures of the cord, transfixcd (after opening it to make sure it was empty), ligatured and cut away, the conjoint tendon united to Poupart's ligament by two, three, or more silk

sutures, and the aponeurosis closed over the cord by silk sutures. In six cases Halsted's method of uniting the aponeurosis beneath the cord was adopted. In three of these a slight bulging was noted at the end of the year a little above and outside the situation of the internal abdominal ring. These are by no means the only cases of partial failure with Halsted's operation which have been noted here. It would seem that too direct an opening is left through the wall of the abdomen by this method of suture. All these cases healed by first intention except one, and silk was used in all but one case. The exception, which suppurated, had McEwen's operation performed upon him and silk was used. Fifty-four days after the operation he was put under chloroform and all the sutures and the ligature on the sac were removed. The wound then healed soundly, and when inspected at the end of the year (*i.e.*, in April, 1906) there was no sign of recurrence. The question of recurrence of the hernia in these cases was naturally the most interesting point. A man has a right to ask that if he submits to the inconvenience of an operation he shall have a reasonable assurance of being free from his defect. Our experience shows that, taking cases of all kinds and at all ages, he would be a bold surgeon who could give any such assurance. A precautionary routine of three weeks in bed after operation, and three to four weeks before going back to work after leaving hospital, was followed in all cases. An inspection of cases took place in April, 1906, and in three cases recurrence was noted. These results cannot be called good, but it is to be noted that the failures all occurred in connection with one method of operation, all the rest being up to the present successful.

Hernia in its relation to the Workmen's Compensation Act comes under frequent consideration at the Royal Arsenal. If certified to be due to the nature of a man's work it may be made the basis of a claim to injury pay and to compensation. Cases where a congenital sac exists might be fairly ruled out of court, but they are rare, and when present not always easy to recognise. On the other hand, a hernia suddenly forced down by a powerful strain might be considered admissible, but here again there are difficulties. We have never been able to satisfy ourselves that such an occurrence is possible in the absence of a congenital sac. Continuous laborious strain, like continuous lifting of heavy weights, may conceivably cause the gradual formation of a hernia, the existence of which is only observed when the sac has attained a certain size. But it is just in these cases that a man's foreman

hesitates to supply the needful certificate that the injury was caused at and by the work performed. The medical officer has no means of testing the man's reaction to the nature of his work on the spot; indeed, his opinion is not asked for till the mischief is done. So that to do justice to the workman and to the public who employs him, is not at all an easy matter. Our practice is to refuse admission to the Arsenal to all men with hernia, and then to judge each case that arises on its merits, taking the nature of the man's work into consideration, and practically refusing to consider any hernia as arising suddenly.

(9) *Gastro-enterostomies*.—Lieutenant-Colonel Loughheed writes the following notes of the three cases of jejunostomy: "A. C., aged 42, had suffered from symptoms of pyloric obstruction for many months and was losing flesh. I had the advice of Mr. Bidwell, of the West London Hospital, in this case. He considered that it was probably of a non-malignant nature, and advised a gastro-jejunostomy. Upon opening the abdomen by a vertical incision, $\frac{1}{2}$ an inch to the left of the middle line, I found a mass about the size of a closed fist occupying the situation of the pylorus. It was fixed and evidently malignant, for enlarged glands could be felt in the transverse fissure of the liver. A posterior gastro-jejunostomy was performed. A posterior row of mattress sutures and the corner sutures were passed and tied. An anterior row of sutures were passed, but not tied until the openings of suitable size (*i.e.*, capable of admitting the tips of three fingers) had been made in the stomach wall and intestine and all bleeding points secured. Two or three sutures were passed between the distal part of the jejunal loop and the nearest part of the stomach to prevent kinking, and the viscera were returned into the abdomen. The peritoneal incision was united with interrupted silk sutures, as were also the aponeurosis of the abdominal muscles in separate layers, and the skin was closed with silkworm gut. The wound healed by first intention, and the temperature never rose above normal. There was no vomiting and no dyspeptic symptom after the operation, and he was discharged from hospital on July 27th to go to a convalescent home. When seen at the end of August he had gained 5 lbs. in weight and had a sound scar and no return of his symptoms. He remained well during September, but in October he began to lose weight and the tumour in the epigastrium was enlarging, but he had no vomiting. During October and November he had abdominal pains and lost flesh rapidly. He died on December 7th, but up to his death had no vomiting. In this case

of cancer of the pylorus the man's life was prolonged by many months, and his end made much more tolerable than if he had not been operated upon.

"W. H., aged 51, had a history of dyspepsia, vomiting and pains after food, and occasional attacks of hæmatemesis and melæna for more than two years. The stomach was much dilated and no tumour was found. A diagnosis of gastric ulcer was made, and after keeping the patient in bed for a week and washing out his stomach daily with boric solution, which brought away some material of a ground-coffee appearance, a posterior gastro-jejunostomy was performed on August 9th, in the manner described in the account of the previous case. The coats of the stomach were found to be considerably thickened, and there was much venous oozing when the stomach and intestine were opened. On the night of the operation the patient was very excited and got out of bed suddenly. He vomited much for the first twenty-four hours, but notwithstanding these drawbacks he made a good recovery. The wound healed *per primam*, and he had no subsequent vomiting, nor any return of his old symptoms. During the next two months he gained about 2 st. in weight, and said he felt better than he had ever been. A hernial protrusion formed at the abdominal scar, owing no doubt to the post-anæsthetic vomiting and to his getting out of bed on the first night. He was fitted with an abdominal belt, which keeps the viscera in place, and he has performed his ordinary duties up to the present date (September 1st) without any return of his former symptoms; as he says himself, 'he feels perfectly well.'

"H. B., aged 36, had a history of chronic dyspepsia for many years, which had become much worse lately. He had attacks of hæmatemesis and melæna on three or four occasions, and periodic vomiting, and pain after taking food. On admission into hospital, on September 1st, he had just recovered from a very acute attack of hæmatemesis, in which he states that he vomited some quarts of dark blood. The stomach was washed out with boric lotion for five days, and on September 6th a posterior gastro-jejunostomy was performed in the same manner as in the two previous cases. The opening in the transverse mesocolon was made of considerable size and stitched at several places to the stomach wall so as to avoid subsequent hernia in that direction. Two 'kink' stitches were placed in the distal part of the jejunal loop. No marked thickening of the pylorus was found, nor was much dilatation of the stomach present. The abdominal incision was closed in the usual manner.

He recovered quickly from the operation and had a good deal of nausea but little vomiting after the anæsthetic. The subsequent history was very favourable. Temperature remained normal and the wound healed by first intention. His weight three weeks after the operation was 8 st. $\frac{1}{2}$ lb., when he was sent to a convalescent home. He was sent to duty on December 9th, having had no vomiting or dyspepsia since the operation, and his weight then was 9 st. 2 lbs. He has remained at work ever since, and continues quite free from all his old troubles. The abdominal scar is quite sound."

(10) *Cholecystostomy* (Major Pilcher).—This was performed on A. E., aged 30, on September 17th. He gave a history of several attacks of acute pain, evidently due to gallstone impaction. He presented all the usual symptoms of jaundice, and had a hard, tender swelling about the size of an orange in the situation of the gall bladder. There was moderate fever. An incision was made along the outer border of the right rectus from the ribs to the umbilicus, the muscle drawn inwards and the peritoneum opened. An enlarged and inflamed gall bladder presented, and after being carefully packed round with gauze, was tapped with a trocar and cannula and then incised. About 6 ozs. of pus were evacuated, and what looked like a cast of the entire mucous membrane of the gall bladder. There were no actual gallstones in the pus, but masses of a creamy pultaceous material, which it is probably correct to consider as either gallstones in the making or gallstones softened in the pus, were present. The liver was then pulled well up and the ducts examined carefully for stones, but without result. There were no adhesions found. The opening in the gall bladder was then stitched to the upper part of the abdominal opening in the way recommended in Cheyne and Burghard's work on surgery, *i.e.*, so that, as contraction takes place in healing, the edges of the opening in the gall bladder are turned inwards, peritoneum meeting peritoneum, and thus the healing of the biliary fistula is promoted. The wound in the abdominal wall was closed in the usual manner in the lower part, the upper part being left open and a drainage tube inserted into the gall bladder. Recovery was very rapid and satisfactory, jaundice disappeared, stools and urine became normal, food was well taken and digested, and by October 9th, the day on which the patient returned to work, the fistula had completely healed and he had gained considerably in weight. He has been seen at intervals since, and relief from all symptoms but occasional dyspepsia continues. The abdominal wound remains sound.

(11) *Suture of Perforating Ulcer of Stomach* (Major Pilcher).—S. P., aged 32, was washing a floor on the afternoon of February 10th, 1906, and while stretching forwards felt something give way in his abdomen. This was followed by severe pain, and he came to hospital in the evening, some four or five hours later. There was then no collapse, and the pulse was good; but the respiration was embarrassed, and there was abdominal pain with spasm of the right rectus muscle. He was anæsthetised and the appendicular region first explored by a vertical incision along the outer border of the rectus. The appendix was found to be healthy. The abdomen was then opened in the middle line above the umbilicus, and there was immediately an escape of fluid and gas, and, on further search, a perforation was found on the anterior wall of the stomach in the vicinity of the pylorus. The coats of the stomach were infiltrated and friable for a inch round the perforation, so that to find a part of the wall which would stand the tension of stitches was by no means easy. Finally the opening was securely closed by two tiers of Lembert's sutures, and the abdomen thoroughly washed out with sterile salt solution. A drainage tube was passed through the lower opening in the abdominal wall and brought out behind through Petit's triangle, and the upper wound was partially closed, several gauze wicks being left in it, passing both to the wound in the stomach wall and also in different directions among the intestines. All the efforts to exclude sepsis from the abdominal cavity, however, proved unsuccessful. Temperature fell and the pulse-rate rose on the third day after the operation, and there was increasing meteorism and dyspnœa. He died on February 15th, 1906. There was an obscure history of dyspepsia and pain after food of some years standing, but no hæmatemesis or melæna. Rupture took place in the afternoon, and therefore not long after the heaviest meal in the day, when gastric digestion was at its height and the acidity of the gastric contents well marked. Complete evisceration and washing of each separate coil of intestine, as recommended by Cheyne and Burghard, might have availed to completely cleanse the abdomen, but short of this a very thorough cleansing was carried out. Evisceration means very complete cleaning, but it also means possibilities of fatal shock and difficulties sometimes in the return of distended intestine. The soiling of the peritoneum being only partial, it was considered that the ordinary method of washing out would be sufficient in this case.

(12) *Urethrotomy for Stricture of the Urethra*.—Of these operations four were performed. Three were internal urethrotomies and

were performed by Colonel Loughheed, who gives the following account of them: "A. W., aged 37, was admitted on August 24th, with retention of urine and a history of urethral stricture for some years. No instrument could be passed, and the bladder was tapped suprapubically. After warm baths and sedatives a filiform bougie was introduced into the bladder and an internal urethrotomy was performed with Teevan's instrument, and two fibrous strictures divided in front of the triangular ligament. A No. 16 silver catheter was then tied into the bladder, and this organ was then washed out daily for four days, after which the catheter was removed. He had no rise of temperature and the subsequent progress was good. He had a full stream on micturition, and a No. 15 sound passed without difficulty daily for some time after he had resumed work. He attended once weekly for a couple of months to have a large sound passed, and he is now quite well.

"W. G., aged 44, was almost a similar case. An internal urethrotomy was performed on September 18th. Three strictures were successively encountered and divided by Teevan's instrument. The subsequent progress was very satisfactory, and he returned to duty cured, and has remained well up to the present time.

"R. R., aged 46, was admitted on December 4th on account of old-standing stricture with spasmodic retention. No instrument could be passed, but urine came away after a hot bath. He had much cystitis and some blood in the urine. He was kept in bed and put on urotropine for ten days, during which time urine dribbled away. An internal urethrotomy was then performed with Teevan's instrument, the stricture divided, and a large silver catheter tied into the bladder. Severe shock and collapse followed about 11 p.m. on the night of the operation, with some hæmorrhage from the penis. His bladder was thoroughly washed out, and as his pulse was very small about three pints of normal saline solution were infused into the median basilic vein. This did him a little good, and the slight bleeding ceased. His pulse gradually failed, although he was freely stimulated. He died twenty-eight hours after the operation. He had no rigors or rise of temperature after the operation. No *post-mortem* was allowed, so that the condition of his kidneys could not be ascertained. His symptoms would point to some poison (possibly choline) generated in the system after the traumatism of the operation, lowering his blood pressure and ending in death."

The fourth case was one of external urethrotomy performed after Syme's method, and was under the care of Major Pilcher. A. D.,

aged 52, an old soldier, had a very hard stricture with a fistulous opening in the perineum. Some years before Sir Henry Howse had operated upon the stricture, and the fistula was probably in the track of his operation wound. It was found possible at the operation to use a Syme's staff, which was accordingly passed and cut down upon in the usual manner, traversing the scar of the previous operation and including the fistulous track. The stricture was divided from behind forwards, the staff withdrawn, and a No. 14 silver catheter tied in for four days, and the bladder washed out daily. Since then a No. 14 sound has been passed with decreasing frequency, and the man has now no trouble of any kind.

(13) *Lithotomy*.—This case was operated upon by Colonel Lougheed, who gives the following account:—

"C. K., aged 30, had several calculi removed by litholapaxy at St. Peter's Hospital in December, 1904, and again in July, 1905. On admission his urine was very foetid and contained blood, mucus, and phosphates, and was passed every few minutes with much pain and tenesmus. He was kept on urotropine and had the bladder washed out daily for three weeks. As the condition did not improve, an operation was considered advisable. With a sound, calculi were easily detected. A suprapubic operation was not considered advisable, on account of the danger of infecting the cellular tissue above the bladder by the foetid urine; nor could proper drainage be established, or rest given to the bladder by this route. A lateral lithotomy was accordingly performed on December 20th, and thirteen calculi removed, weighing altogether 427 grains in the dry state. One calculus was embedded in a pouch, and its free surface was extensively facettted from the rubbing of the others. It weighed 152 grains. A large flat phosphatic deposit was with some difficulty removed from the area of the trigone. After the removal of as many calculi as could be felt with the finger, the bladder was thoroughly washed out and some phosphatic *débris* got rid of. The patient became very excited on the night of the operation, and sat up in bed and removed his dressings. He had some bleeding from the perineal wound, which continued at intervals until January 2nd, when the bladder was washed out through the wound, and its cavity explored with the finger. No more calculi could be detected. As the bleeding continued, a rigid tube was passed through the wound into the bladder and iodoform gauze packing introduced all round it fairly tightly. This allowed the urine to come away and stopped the bleeding. When this tube was removed, on January 8th, bleeding recurred, and the wound was again packed in a similar

manner. This was left in for a few days, and the bleeding did not recur on its removal. The subsequent progress was very satisfactory. The wound healed soundly in a fortnight, and he passed his urine normally, all cystitis disappearing. He put on about 2 stones in weight during the next two months, and returned to work on March 24th, quite well and without any cystitis or phosphates in his urine. He remains quite well up to date (September 3rd), his urine being quite clear, and his weight 10 st. 4½ lbs."

(14) *Operation for Varicocele*.—The high operation recommended by Sir William Bennett was done in all cases. All healed by primary union and no further trouble was experienced.

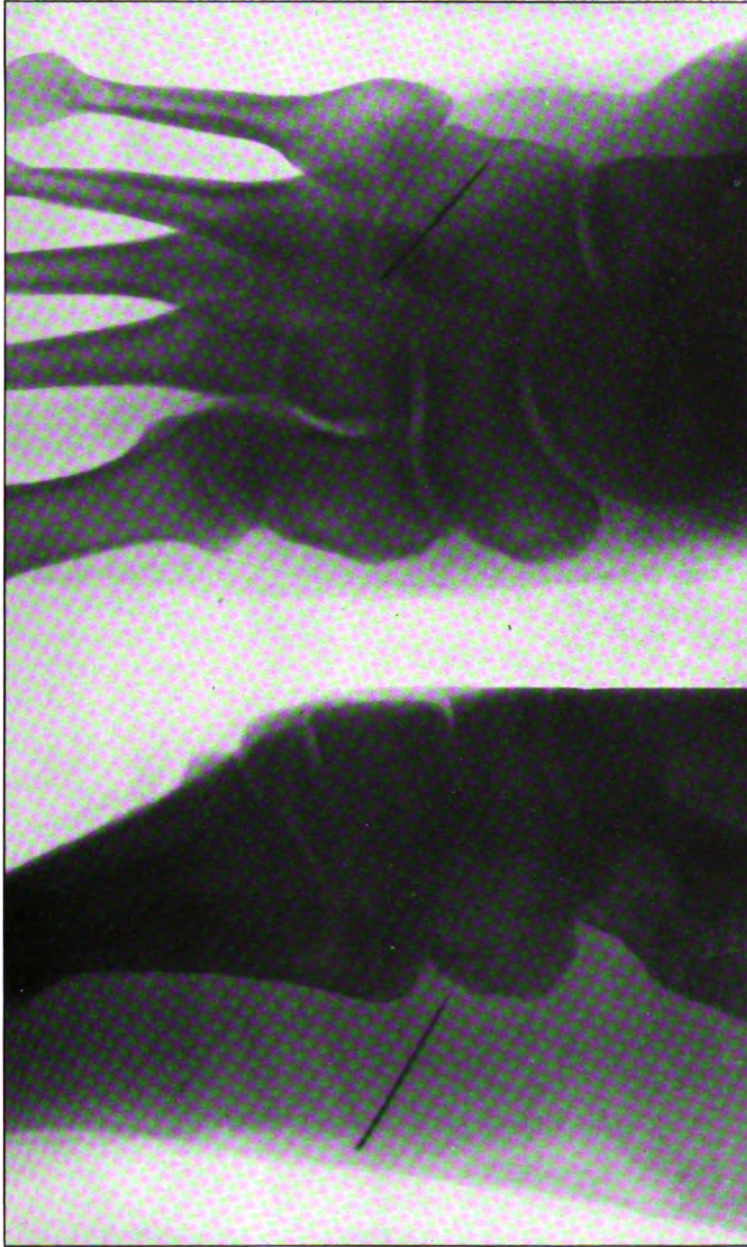
(15) *Operation for Hydrocele*.—In two cases there was an old-standing hydrocele of the tunica vaginalis, which had been frequently tapped. In one the sac extended up to the external ring, and there was no communication with the abdominal cavity. In these the sac was isolated and cut away close to the reflection of the parietal layer on to the testis and epididymis, and the skin was closed. In the fourth an encysted hydrocele of the cord was dissected out bodily and removed. In the fifth a remarkable cystic condition existed on both sides in connection with a double vaginal hydrocele. A number of small cysts, having apparently no connection with the tunica vaginalis, or with each other, were found in the vicinity of the globus major. They were probably dilated accessory tubules of the epididymis, possibly those called Kobelt's tubes. They were removed with the parietal layer of the tunica vaginalis on both sides. All these cases healed by first intention and gave no subsequent trouble.

(16) *Drainage of an Inguinal Abscess*.—(Major Pilcher). E. W. came to hospital with a large abscess pointing above Poupart's ligament. There was the scar of an old operation in the left inguinal region, which he said had been performed, for "obstruction," six years before in Charing Cross Hospital. So far as he knew, no tumour was found and nothing had been removed. He was anaesthetised on April 11th, 1905, and about 6 ounces of pus evacuated. The man returned to work with the sinus in the groin still discharging slightly, but causing little inconvenience. At the end of the year, it was decided to follow up the sinus and make an attempt to close it. On January 13th, 1906, an incision was made parallel to Poupart's ligament down to the transversalis fascia, and all the structures pushed inwards, exposing the sheath of the psoas muscle. A probe passed into the sinus was then found to lead to a sinus beneath the psoas sheath, which was accordingly opened up



Case of Needle impacted in Foot.

To illustrate "Surgical Report for the Royal Arsenal, Woolwich, Year 1905-6."
By Lieutenant-Colonel S. F. LOUGHEED, C.M.G., and Majors J. C. JAMESON,
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to the extreme limit to which the probe reached. The whole track of the sinus thus laid bare was thoroughly scraped down to the opening in the groin, and the wound was packed with a strip of iodoform gauze. The superficial structures were then allowed to fall back into place, a few sutures united the muscles, and the skin wound was closed and dressed in the usual manner. The wound did not heal quite antiseptically, as was hoped, but gradually healed with the formation of a certain amount of pus, and the man returned to duty. The origin of the condition remains a mystery. No history of spinal diseases could be obtained, though the condition found renders such a cause in a high degree likely. The man was, and remains, a particularly strong, healthy-looking individual, with no signs of tubercle in any other part of the body.

(17) *Removal of Hæmorrhoids*.—The method usually adopted was, after dilatation of the sphincter, to seize the pile, and divide the mucous membrane round its base. The base was then transfixed with a needle on a handle threaded with stout silk, and the ligature tied. The pile was then cut away, and when as many others as was considered necessary had been similarly treated, a tube was placed in the rectum and packed round with iodoform gauze, a pad of gauze was placed against the anus, and the dressing completed with a T-bandage. A half-grain morphia suppository was usually placed in the rectum, and the bowels were kept confined and the patient on milk diet until the fourth day.

(18) *Operations upon Fistula in Ano*.—Three of the cases were over 50 years of age, three over 40, the youngest being 25. This is evidently a disease of adult and late adult life. In two cases tubercle existed in other organs of the body; one healed soundly, the other resisted all treatment and still exists. In all cases no internal opening was found, and it is probably extremely rare for an ischio-rectal abscess to open into the bowel. It may be argued that much time and patience may be necessary to find the internal opening, especially when the track is tortuous, and that surgeons find it unnecessary to expend time over such a search. The point is not of much importance surgically, but text-book descriptions do not as a rule indicate the condition of things usually found: a blind external fistula.

(19) *Diseases and Injuries of the Lower Extremity*.—Most of these 15 cases were accidents at work of varying degrees of severity. The following deserve mention:—

(a) T. C., aged 55, had dry gangrene of the left foot as far back as the bases of the metatarsals. Amputation was performed at the

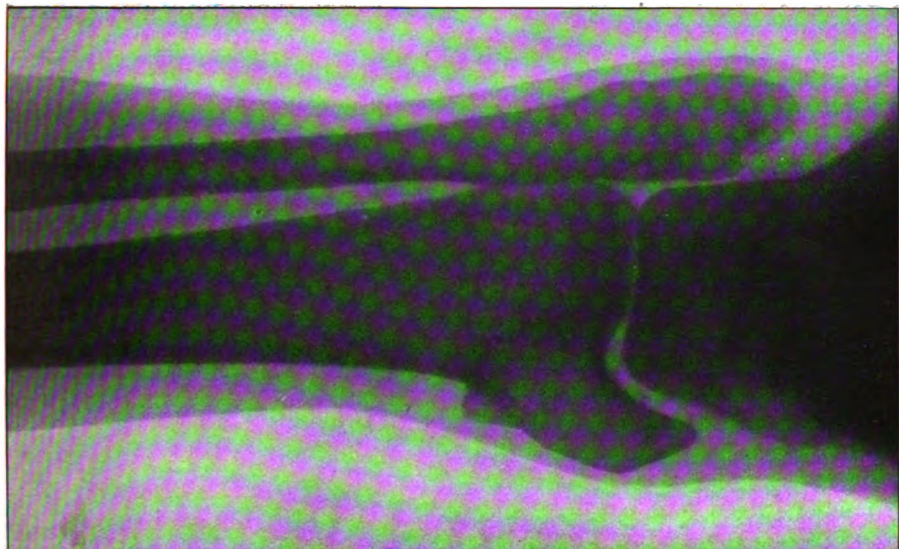
site of election by lateral flaps. The arteries were of a greatly reduced calibre and like pipestems for hardness; indeed, it was a serious question if they would hold a ligature at all. The anterior part of the flaps sloughed over an area corresponding to the distribution of the recurrent tibial artery, and a flake of bone separated from the cut surface of the tibia, otherwise all went well.

(b) W. S., aged 24, had his right leg amputated through the thigh on January 26th, 1904, for tubercle of the knee-joint. On December 19th, 1905, he attended with a tubercular abscess on the dorsum of the foot, which was twice scraped and packed with iodoform gauze. The bones and synovial membranes of the tarsus do not seem to have been in any way affected. The lungs were not invaded.

(c) J. L., aged 58, was injured by the fall of some heavy barrels upon his right leg. Both malleoli were broken off, and the astragalus, carrying the foot with it, was displaced inwards and tilted somewhat inwards. The skin was stretched almost to bursting point, but reduction was effected under chloroform before sufficient took place to cause sloughing. An excellent result was obtained, with a freely moving joint. An X-ray photograph is appended.

(d) Two cases of needles impacted in the foot were dealt with. The X-rays demonstrated the position of the needles, which were cut down upon and extracted.

(20) *Operations of Varicose Veins.*—Nine operations were performed upon varicose veins of the leg. Trendelenberg's method of removing a piece from the internal saphenous vein was invariably adopted, and an attempt was usually made to identify and remove the communicating vein between the external and internal saphenous veins behind the knee. The operations were pretty radical, extending often along the greater part of the limb, and they were on the whole very successful, healing taking place by first intention and a sound and painless scar resulting.



Radiographed about ten months after date of accident.

Case of Fracture—Dislocation of Right Ankle-joint.

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TRANSACTIONS OF THE PATHOLOGICAL LABORATORY,
CURRAGH CAMP, DURING THE YEAR 1906.

By MAJOR F. E. GUNTER,
Royal Army Medical Corps.

IN addition to the routine work of the laboratory the following experiments were made:—

Air of the Wards.—The result of the bacteriological examination of the air of the wards has been well worked out. An agar plate was exposed in Ward 8 (the special surgical ward) and after three days' incubation at 37° C. numerous colonies appeared. These proved to be *Staphylococcus aureus*. The ward was clean to the superficial glance, but on minute inspection collections of dust were found. After a thorough cleaning of the ward the air was again tested as before and no colonies appeared on the plate. The air of Ward 4, a very clean ward, was tested and found to be sterile. The air of Ward 7 (a ward for septic cases) was tested. The plate was almost covered with colonies of *Staphylococcus*. After a thorough cleaning the air was found to be considerably purer.¹

Examination of Surgical Wounds after Operation.—Practically all wounds made by the surgeon were examined bacteriologically when the stitches were removed. The method adopted was as follows: All aseptic precautions being taken, a stitch on its removal from the wound was dropped into a broth tube and incubated at 37° C. The test was only used in cases of wounds that had healed by first intention. In the very great majority of cases micro-organisms were detected. These were nearly all *Staphylococcus*. It is, I think, probable that infection of the stitches comes from the deeper layers of the skin, which it is, of course, impossible to render sterile. Working on this assumption I am now using a semicutaneous suture. It is possible that in the ordinary suture which penetrates the subcutaneous tissues micro-organisms may grow down the suture to the deeper tissues. Whether this is so or not, the improvement in the scar has been remarkable since the semicutaneous suture has been used.

Investigations made into Aseptic Methods.—The system of sterilisation in "drums" is practically found to be unsatisfactory. It is of course good enough when one case only is being dressed; but if several cases have to be dealt with there is liability of contamination. For ward use, especially in a septic ward, it cannot be done. It would be impossible to use a fresh drum for each case. Freshly boiled gauze for each case is also impracticable

¹ The condition of the wards as to temperature and number of occupants was practically the same. In each case the examination was made at 11 a.m., two hours after the ward had been swept.

on account of delay. What had been previously done in the septic ward was to boil a certain amount of gauze and transfer this to a glass jar with a cover. Some of this gauze was tested and found to contain staphylococci. What is now done is as follows: A sufficiency of tins of a convenient size are supplied to each ward. These are filled, some with gauze, some with wool, and are then autoclaved and sealed. When once used for any case the tin is treated as contaminated and not used again without re-sterilisation. The method is most simple and is found to be an actual saving of time when it has been learnt. When autoclaving, the lids should be loosened to admit of free penetration of steam.

The Disinfector as a Substitute for the Autoclave.—Comparatively few hospitals have an autoclave, but most of them have a disinfector.

To see if the disinfector could be used for this purpose the following tests were made: An ordinary broth tube was placed in the disinfector and subjected to a temperature of 260° F. It was afterwards incubated for three days and was found to be sterile. This proved that the cotton-wool plug was an effective protection. Doubt was cast on the method by Private Buckell (Laboratory Assistant). He suggested that the rush of cold air into the disinfecting chamber on the completion of the process might be a source of infection. An agar plate was accordingly introduced and subjected to exactly the same conditions as matter requiring sterilisation, and there incubated; a growth appeared after twenty-four hours' incubation at 37° C., which proved to be *Staphylococcus*. Private Buckell's surmise was therefore correct. To obviate this the inlet hole for cold air was plugged with sterile wool soaked in 1—20 carbolic. Agar plates were exposed and found to be sterile after three days' incubation. With the above proviso, then, the disinfector can be as safely used as the autoclave, and I have proved it practically, all dressings being treated thus for a month, with eminently satisfactory results, during the time that the autoclave was out of repair.

Justus' Test for Syphilis.—This test is recommended to be used as a routine in the American Army for diagnostic purposes. The test is performed as follows: According to Justus, "if, in cases in which secondary symptoms have not yet appeared, we test the hæmoglobin after giving inunction or subcutaneous injection of mercury, we find that within twenty-four hours a very marked fall in hæmoglobin has taken place (10—12 per cent.), owing to the action of the mercury on the weakened corpuscles. This sudden fall is followed by a gradual rise, until within a few days the colouring matter is at a point, slightly higher than before the mercury was given. In diseases

other than syphilis the sudden drop does not occur. After the advent of the secondary symptoms the peculiar reaction of the mercury does not occur." (Cabot.)

To check the efficiency of the test several cases were submitted to this hæmoglobin test, the earlier ones by Lieutenant M. Keane, R.A.M.C., the latter by Lieutenant A. G. Cummins, R.A.M.C.

Lieutenant Cummins has worked a great deal at this subject and below is his summary and conclusions :—

To establish the utility of this test in cases of primary syphilis two series of cases were taken.

In the first series, the mercury was given by intra-muscular injection, ten minims of the cream being administered, containing one grain of metallic mercury.

First series	No. of cases	No. of cases which afterwards developed secondary syphilis	No. of cases which after three months showed no signs of syphilis
Cases which gave a positive reaction for syphilis	5	1	4
Cases which gave a negative reaction for syphilis	8	6	2
Total ..	13	7	6

In the second series of cases mercury was given by inunction, as it was thought that when given by injection it was not absorbed sufficiently rapidly. Gr. 45 ung. hydrarg. was used in each case, and was rubbed into the groins after a hot bath.

Second series	No. of cases	No. of cases which afterwards developed secondary syphilis	No. of cases which after three months showed no signs of syphilis
Cases which gave a positive reaction for syphilis	4	0	4
Cases which gave a negative reaction for syphilis	5	2	3
Total ..	9	2	7

The above results go to show that, in our hands at least, this test is absolutely misleading. Ewing, in his clinical pathology of the blood, gives the following percentages for his cases :—

Thirty per cent. positive results in cases of chancre.

Sixty-seven per cent. positive results in cases of chancroid.

Our results in our small number of cases are somewhat similar, being approximately :—

Eleven per cent. positive results in cases of chancre.

Eighty-nine per cent. positive results in cases of chancroid.

CATARRHAL CONJUNCTIVITIS.

BY LIEUTENANT H. H. B. CUNNINGHAM.

Royal Army Medical Corps (Militia).

IN this short paper I propose to discuss those maladies known as acute and as chronic catarrhal conjunctivitis, omitting such specific inflammations as gonorrhœal ophthalmia.

Anatomy.—Perhaps it will not be amiss to mention the structure of the conjunctiva before proceeding to study a pathological state of that membrane. The conjunctiva is a mucous membrane lining the inner surfaces of the eyelids, whence it is reflected on to the globe of the eye, of which it covers the anterior third. Three parts may be described, viz., the palpebral, the fornices, and the ocular, the latter of which may be subdivided into scleral and corneal. The palpebral conjunctiva lines the inner surfaces of both upper and lower lids, extending from the free margins, where it is gradually transformed into the epithelium of the skin, to the fornices; it is closely attached to the subjacent tarsal plates. The fornices consist of some small folds of the membrane placed parallel to the length of the lids; it is the presence of these folds which enables the eye to move in all directions, irrespective to a great extent of the lids, and they consist of the intervening portion of the membrane which is being reflected from the eyelids on to the globe. The scleral portion extends from the fornices to the limbus, *i.e.*, that narrow raised portion immediately encircling the cornea, whence it passes into the corneal conjunctiva; it is very loosely attached to the subjacent sclera, and on the cornea the membrane resolves itself into the anterior epithelium of that structure. At the inner extremity of the palpebral fissure is a small, raised, round projection, the caruncle; immediately to its outer side is a small semilunar fold of the conjunctiva, yclept the plica semilunaris, which corresponds to the membrane nictitans or third eyelid present in birds and many quadrupeds. Histologically the conjunctiva consists of two parts, the epithelium and the substantia propria; the character of the epithelium varies in different regions, the palpebral portion consists of two layers of a laminated cylindrical type, of which the cylindrical cells are superficial; at the fornices three layers are found, and in the scleral portion the epithelium is gradually becoming stratified, being definitely so at the limbus. Acinous mucous glands—"Waldeyer's glands"—are found along the

convex border of the tarsal plates, analogous glands—"Krause's glands"—in the fornices. Goblet¹ cells are found in all parts of the conjunctival epithelium, especially in the fornices and scleral portions; their presence is of the utmost importance, for it is due to the mucus they secrete moistening and so protecting the conjunctiva and cornea, that we are enabled to remove the lachrymal gland without any ill effects. The substantia propria consists of fibrous connective tissue of the adenoid type, for it contains many lymphocytes, especially in its superficial layer. It is this fibrous layer which is closely connected to the tarsal plates, and into it the posterior lamella of the levator palpebræ superioris is inserted. The conjunctiva receives its blood supply from both the palpebral and anterior ciliary arteries.

General Pathology of Conjunctivitis.—In a similar manner to inflammation elsewhere, the lymphatics and blood-vessels of the conjunctiva are dilated, with exudation of serum and diapedesis; leucocytes, lymphocytes, and plasma cells are found in abundance, and the lymphocytes normally present in the substantia propria are markedly increased in numbers; this latter structure, consisting of loose connective tissue, is easily distended with exudation, thus causing the chemosis so frequently seen. The epithelium itself may be swollen, thus accounting for the loss of transparency sometimes noticed, and the goblet cells are increased in number, especially so in the chronic inflammations; indeed, new tubular glands may actually be formed. The secretion seen in the palpebral sacs varies in consistence from the aqueous fluid seen in epiphora, resulting from a reflex stimulation of the lachrymal gland, to thick muco-pus or even pus; this discharge contains, in addition to the lachrymal secretion, plasma exuded from the blood-vessels, mucus from the goblet cells and acinous glands, and a varying number of leucocytes and pus corpuscles.

Acute Conjunctivitis.—The etiology of this complaint may be divided into predisposing and exciting. The predisposing cause is anything that will tend to prepare the conjunctiva for the action of the exciting cause, and consists in the main of a lowering either of the local vitality, as by a cold or presence of a foreign body, or of the general vitality, such as may result from defective hygienic surroundings, alterations of climate, &c. The exciting causes are several micro-organisms, of which the bacillus discovered by Koch in Egypt in 1884, and by Weeks in New York in 1885, is far and

¹ "The Pathology of the Eye," Parsons, vol. i., p. 81.

away the most common. This bacillus, usually known as the Koch-Weeks', or simply Weeks' bacillus, is a short, fine rod, which is difficult to grow in culture, but when grown is non-motile, stains faintly with aniline dyes, and is decolourised by Gram's method. The bacillus attacks all ages, but most frequently the young, causes a muco-purulent conjunctivitis, which is highly contagious, handkerchiefs, towels, &c., being the usual media of contagion, and when one member of a household is attacked by this disease, usually every other member is subsequently affected. It is this disease which sometimes breaks out in institutions and schools, being then known as school ophthalmia. I am informed that the severe attacks of catarrhal conjunctivitis, often accompanied by disastrous results, occurring in Egypt, are due to this bacillus. Other bacilli may be the exciting causes of this condition, among which is the pneumococcus, which also gives rise to epidemics, and they, too, amongst the young, the zerosis bacillus, a form of which Gelpke found on investigating an epidemic, and which he named the *Bacillus septatus*, and streptococci. These latter micro-organisms are occasionally found mixed with others in the discharge from cases of catarrhal conjunctivitis; their appearance is evidently rare, for many of the text-books on ophthalmology make scanty reference to them in their descriptions of this form of conjunctivitis, e.g., Fuchs¹ only quotes Morax as stating that streptococci are found in cases of catarrh accompanied by lesions of the lachrymal sac. Inglis Pollock,² on examining, bacteriologically, 362 cases of conjunctivitis only found the *Streptococcus pyogenes* in three cases, in each of which there were other organisms present. But a pure culture is obtained in some rare instances, as in the two following cases, viz.: A. F., aged 2, was brought to hospital with a history of a sore left eye for three weeks, the lids being glued together in the mornings occasionally, and there was a dry eruption on the face. The right eye appeared quite healthy. There was slight œdema of the left lids, palpebral conjunctivitis, a very slight injection of the ocular conjunctiva, cornea and iris clear. There was a large swelling over the left parotid region of the same duration as the sore eye. The case was treated at first as an ordinary one of catarrhal conjunctivitis. Three days later the swelling in the neck was in a similar condition, but the eruption in some parts

¹ "Text-book of Ophthalmology," Fuchs, Second American Edition, 1905, p. 48.

² *Transactions of the Ophthalmological Society of the United Kingdom*, Inglis Pollock, vol. xxv., p. 32.

of the face was becoming purulent; there was marked œdema of the left eyelids, which were a little red in colour. The palpebral conjunctiva was markedly injected, the ocular in a state of chemosis, and muco-purulent discharge was present in the sacs, the iris and cornea still clear, and the other eye unaffected. Four days later the face and neck were still in a similar condition, the swelling of the left eyelids slightly decreased, but they were still red; there was free muco-purulent discharge, marked chemosis, the whole of the cornea was cloudy and contained a large deep central septic ulcer, with shreds of plastic lymph adherent to it, and a large hypopyon half filling the anterior chamber, and the eye was lost. J. H., aged 16, came to hospital complaining that a week previously he had, while beating carpets, got some dust into his left eye, and the same evening it became red and sore. The left lids were slightly swollen and red, there were pain, photophobia and lachrymation, some chemosis and a muco-purulent discharge. A week later all these symptoms had increased in severity, the chemosis was marked, and presented the appearance of a solid œdema at the upper and inner quadrant, with a sort of pseudo-membrane on the swelling, and there was free muco-purulent discharge. The right eye was unaffected. From this date the symptoms slowly abated, the pseudo-membrane and swelling of the conjunctiva decreasing, so that a month later he was almost well. In both these cases swabs from the palpebral sacs were examined, and gave pure cultures of streptococci.

The symptoms of acute catarrhal conjunctivitis vary in severity. A history is usually given that the sufferer caught a cold in his eye, or that he got it from someone else who had sore eyes. Both eyes are usually affected at once, or one shortly after the other. They usually complain of more or less photophobia, and of a burning pain in the lids. There is some lachrymation; the sight may be dimmed by shreds of mucus floating on to the cornea, and the lids are occasionally glued together in the mornings, with tears and pus pent up inside. On inspection one notices that the lids sometimes are œdematous; the ocular conjunctiva is more or less injected, hence the name "pink eye." There frequently is some chemosis. There is marked injection of the palpebral conjunctiva, and on pulling down the lower lid, a flake of muco-pus is usually seen floating on the tears in the lower part of the palpebral sac; the more severe the inflammation the more marked is the conjunctival injection, and the greater and more purulent is the quantity of the discharge. This condition may be com-

plicated by the presence of corneal ulcers or iritis, *e.g.*, M. M., aged 8 months, complained of sore eyes for a week, slight swelling of lids, marked injection of palpebral and ocular conjunctivæ, mucopurulent discharge, corneæ clear, photophobia and lachrymation. Four days later she could open her eyes herself, but the edges of the lids were sore; she was not seen for a week, when the right eye was in a similar condition, but in the left there was marked mucopurulent discharge, and the cornea was hazy, with a central septic ulcer. In a fortnight she was much better and could open this eye herself, and had quite recovered a week later. This condition usually clears up in ten days or a fortnight under treatment, but one frequently meets cases in which there is a definite rhinorrhœa, and in which the conjunctival affection will last till the nasal is cured, *e.g.*, A. D., aged 3, came complaining of his eyes having been sore for three weeks. The usual symptoms of catarrhal conjunctivitis were present, complicated by a small superficial ulcer on the left cornea, but he had a definite rhinorrhœa. He was treated in the manner to be described presently, with, in addition, the use of a nose spray and boric ointment for his nose. He steadily improved, so that three weeks later the rhinorrhœa had ceased, and he could then open his eyes a little. A fortnight later there was no photophobia, he could open his eye quite easily and was almost well. The treatment of this complaint is simple. I am in the habit of ordering the frequent use of boracic lotion to the eyes, and the application of boracic ointment to the inner side of the eyelids night and morning, and of performing myself what Darier¹ calls *savonnage*, that is, brushing the everted lids with either protargol or argyrol once a day, or less frequently, according to the severity of the symptoms. Where the case is complicated by a corneal ulcer atropine is usually instilled; the eyes are not bandaged even when an ulcer is present, so as not to interfere with the free drainage of the discharge. One can use nitrate of silver, but the named preparations are equally efficacious, if not more so, and they have the advantage of not being nearly so painful. The following cases illustrate the results obtained by this treatment. E. S., aged 10, came complaining of sore eyes for a week; she had had a similar complaint two years ago, and the usual symptoms were present. She was ordered boracic lotion and ointment for home use, and *savonnage* was performed with argyrol at intervals of a few days. Unfortunately her attendances were somewhat

¹ "Leçons de thérapeutique oculaire." A. Darier.

irregular, so that her eyes were not quite well till six weeks after her first appearance; but she then ceased applying the lotion and ointment, with the result that there was a relapse, which, however, was cured a fortnight later. S. B., aged 12, complained of sore eyes for five weeks. The palpebral conjunctiva was injected, ocular slightly, corneal clear; some muco-pus in palpebral sacs, also photophobia; no swelling of lids. He was ordered boracic lotion only for home use, and *savonnage* with argyrol was performed every third day. Ten days after first attendance he was almost well.

Chronic catarrhal conjunctivitis may result from a preceding acute attack, which has not resolved but passed into this form, or from the presence of a foreign body on the conjunctiva or cornea. It is frequently seen in children dating from an attack of measles; in adults one often sees it in those patients whose occupation exposes their eyes to constant irritation, as by injurious gases, particles of dust, smoke, &c., and in the aged it is frequently seen. Darier¹ mentions an alcoholic type. In whatever manner started the most frequent cause of the continuation of this complaint is an error of refraction, especially astigmatism. Various bacteria are found in the palpebral sacs, but there is one form of micro-organism, the bacillus discovered independently by Morax and by Axenfeld in 1896, a diplo-bacillus decolourised by Gram's method and difficult to grow in culture, which gives rise to a definite form of chronic conjunctivitis, usually known as chronic angular conjunctivitis. The subjective symptoms of this complaint are very definite; there is a sense of heaviness in the lids, which are sore and irritate the sufferer greatly, feeling as if there was sand in them; the eyes are constantly aching, all these symptoms being aggravated towards evening, especially with the use of artificial light. This group of symptoms is nearly always present in chronic angular conjunctivitis. Another symptom frequently complained of is that the eyelids are stuck together in the mornings, and the patient in these cases will say that he has to bathe his eyes in order to open the lids. Objectively there are not such definite symptoms as those just mentioned; there is no swelling of the lids or conjunctiva; the fornices and palpebral conjunctiva are injected, but not the ocular. There is no obvious discharge as in the acute variety, in fact, there is if anything diminished secretion. In angular conjunctivitis the edges of the upper tarsal plates are more deeply

¹ *Ibid.*

injected than, and so stand out in rather marked contrast to, the surrounding membrane. In these cases one sometimes notices a peculiar, heavy, wearied look about the patient instead of a bright countenance. This condition does not, as a rule, resolve spontaneously, but goes on to involve the lids, which is then known as marginal blepharitis, in which the hair follicles are destroyed by the chronic inflammation, with resulting loss of the cilia, and so a certain amount of disfiguration. The following case shows this condition, although it was complicated by a concurrent attack of phlyctenular conjunctivitis. A. C., aged 13, came complaining of a sore left eye for the previous week. She had all the symptoms of chronic conjunctivitis and blepharitis, *i.e.*, palpebral conjunctivitis, inflammation of the lid margins. The majority of the cilia were missing; those still present were a little distorted; the lids were painful and usually were glued together in the mornings. This condition had lasted for over a year. There was a small septic ulcer in the centre of the left cornea; for the first ten days there was no improvement and a rhinorrhœa commenced; then the condition commenced to improve and ten days later the ulcer was healed, but now two small phlyctenular ulcers appeared on the limbus of the left eye on the outer side. A week later there was a large swelling in the area of these phlyctenulæ, and in fact it appeared as if there were three tubercles close together on this spot; these yielded to hot bathing, fomentations and yellow oxide of mercury ointment, so that a week later they had resolved, but now there were several miliary phlyctenulæ on the inner side of the same cornea. A week later there were two ulcers on the inner side of the same cornea. From this date, however, she commenced to improve, the ulcers healed, the conjunctivitis became less, also the blepharitis, though the edges of the lids were still red and sore. Three weeks later her refraction was worked out under atropine, when compound hypermetropic astigmatism was found, suitable glasses were ordered for constant wear, and now the blepharitis has practically disappeared, but it is doubtful if the lost cilia will be regenerated. In elderly people this chronic blepharitis may extend to the skin on the outer aspect of the lids, the lower especially, and set up eczema, which in its turn, by causing cicatrisation, will result in ectropion, with all its attendant troubles, being produced. The treatment may be divided into general and local; in the first place we must remove the patient into better hygienic surroundings, or protect his eyes by means of goggles from the effects of dust, &c.; locally, one orders an

astrigent lotion, such as alum, tannin, or sulphate of zinc, to bathe the eyes, the last named appearing to have a specific action on the *Morax diplo-bacillus*, and the application of a simple ointment, even plain vaseline, at night time to the lids is very beneficial, in that it will prevent the eyelids being stuck together in the morning. In all cases in which the conjunctivitis does not react quickly to this treatment one should estimate the refraction and correct any error. The value of this proceeding is shown by this case. A. M., aged 39, came complaining of the eyes being inflamed. This had lasted for a month. The lids were stuck together in the mornings; there was a feeling of grittiness as if sand was in his eyes, which was more marked in the morning. His eyes were tired in the evening, especially after reading, and his vision with Snellen's distance types was $\frac{6}{8}$ in each eye. He was ordered lotion *zinci sulphatis*, gr. i., ad \mathfrak{z} i., and vaseline. A month later there was no improvement, and so the vaseline was replaced by an ointment containing sulphate of zinc; six weeks later, even with the constant use of the ointment and lotion, there was no amelioration of the symptoms, so his refraction was estimated, when 2'D. of manifest hypermetropia were found; + 2'D spheres, each eye, were ordered for constant use, and the lotion and ointment to be persevered with. A fortnight later he returned with the gratifying intelligence that the eyes felt all right, and that the lids did not stick together in the mornings, and on inspection the inflammation of the conjunctiva had disappeared. In conclusion, one might perhaps in meeting a case similar to that described above, offer him by way of a *solatium* the following words of Lyttelton :—

Alas! by some degree of woe
We every bliss must gain,
The heart can ne'er a transport know
That never feels a pain.

SOME RECRUITING REFLECTIONS.

BY LIEUTENANT-COLONEL F. P. NICHOLS.
Royal Army Medical Corps.

"OVER height, 71."—"Army Medical Department Report" for 1905, p. 45.

Some experience of recruiting, and particularly a recent critical survey of my Recruiting Register, have convinced me that modification of that interesting but fallible record is necessary, if what I presume to be its main function—the registration of men passed or rejected for the Service on medical grounds—is to be truly fulfilled. I speak of recruiting as carried on at a *depôt*, of which alone I have recent personal experience. Possibly at the great recruiting headquarters in London some of these objections may not apply, but I think it well to realise that, as far as *depôt* recruiting is concerned—I am assuming that, in the main, recruiting is carried on at all *depôts* on the same lines, although, as I shall later point out, there may be individual differences—the records cannot be taken as entirely trustworthy.

Quite lately one modification—a very necessary and obvious one—has been introduced, which makes my plea for further modification more hopeful. I refer to recent orders regarding the erasure from the Register of the names of men "rejected" for the Regulars, but at once "passed" for the Militia. Formerly Private "Jones," ambitious of military glory, presented his puny self as a candidate for the Regular Army, was entered in the Register, rejected for "under chest," advised to do a little growing in the Militia, entered again in the Militia Register and passed, thus occupying an unnecessary line in the Regular Register, counting double in the number of recruits examined, and uselessly adding to the portentous number of medically "unfits" for the Regular Army. His name is now erased from the Regular Register.

All recruits "brought" or "bringing" themselves—for this is now not unusual—to the inspection room are supposed to be entered in the Registers. Thus men passed by careless recruiting sergeants, absurdly under standard, Militiamen under training and others, rejected again and again for the Army, who come up in hopes of finding a lenient medical officer—often, I regret to say, backed by the recruiting officer, whose sole idea is numbers, apart from medical efficiency—men presenting themselves at barracks over whom the recruiting officer in his zeal and haste has passed an uncritical eye

instead of the critical tape, men coming straight to the inspection room because they can find no one foolish enough to bring them—all these uselessly encumber our returns and increase our percentage of “unfits.” But these I reckon amongst our necessary trials. They are at least truly *medical* “unfits.”

There will always be careless recruiting sergeants, there will always be hopeful men on the edge of the standards to worry the recruiting officer “for another chance,” there will always be zealous recruiting officers with eye uncritical except for their own returns, and, I suppose, now that the general public are fully aware that they can “bring” one another or themselves we must expect no falling off in undeveloped infants, whose proper place would seem to be a perambulator. The important point here is the different view liable to be taken by individual officers as to the need of actually entering in their registers obviously unsuitable men—the question, *i.e.*, of “personal equation.”

I consider that large variations may be compatible with serene consciences, but not with trustworthy statistics. Can it be meant that Private “Jones,” whom I enlisted in the Militia because he was “under chest” for the Line, should be again formally registered and rejected because at the end of his forty-nine days’ training he begs me to measure his increased though still inadequate chest? Am I really to cumber my register and spoil my average by examining an obvious “undesirable” who, in default of finding anyone to “bring” him, has “brought” himself? Sometimes a recruiting medical officer has occasion to sternly exhort his sergeant to see that no “weeding” is practised before his appearance in the office: his percentage of rejections at once increases to 50 per cent., and the Inspector of Recruits genially remarks on it. The recruiting medical officer knows he can reduce his rejections with a perfectly clear conscience. He lets it be known that he does not wish obvious “babes and sucklings” registered unless previously attested: his rejections fall at once, and the Inspector of Recruits smiles. No wonder that rejections vary widely in different stations.

But the point to which I wish to call particular attention is more important and more easily remediable. I find many recruits, perfectly “fit” medically, being rejected technically on medical grounds because they do not reach the standard of the particular arm of the Service in which they desire to enlist. A man wishes to enlist in the Royal Garrison Artillery, he is not up to the rather exacting standard of that corps, he is technically “medically unfit”

though in every respect a desirable recruit for the Army. A man may be over height or over weight for the cavalry—very properly—but why should he, if in other respects physically efficient, be dubbed *medically* unfit? I need not multiply instances; they are constantly happening to me and, I presume, to other officers. Persuasion sometimes is of avail to induce men to enlist in other corps for which they are up to standard; or sometimes, after a short interval, they come up again and are passed for other branches of the Service—a needless rejection thus being recorded.

I have roughly analysed my Recruiting Register for the last eight months with this point before me. This is the result:—

June, 1906	1	under chest for cavalry	..	Fit for infantry.
	1	„ „ R.E.	..	Fit for infantry or cavalry.
	1	„ „ Guards	..	Fit for infantry or cavalry or R.A.
Total	3			
July	None.			
August	2	under chest for R.G.A.	..	Fit for infantry or cavalry.
September	3	„ „ cavalry	..	Fit for infantry.
	1	„ „ R.G.A.	..	Fit for infantry or cavalry.
October	2	„ height for cavalry	..	Fit for infantry.
	1	„ chest for R.F.A.	..	Fit for infantry.
Total	4			
November	2	„ „ cavalry	..	Fit for infantry.
	1	„ height for cavalry	..	Fit for infantry.
Total	3			
December	None.			
Jan., 1907	1	under chest for R.H.G.	..	Fit for infantry, R.A., R.E., and cavalry.
	1	„ „ cavalry	..	Fit for infantry.
	1	„ „ and height for R.G.A.	..	Fit for infantry and cavalry.
Total	3			

a total of eighteen in eight months, an average, say, of 2·2 per month. My average “unfits” in the same eight months were thirty, so that about 7 per cent. of my rejections for those months were of men medically “fit” for the Army, though “unfit” for particular corps.

This must amount to a considerable total in the returns of the United Kingdom for a year, unless my experience be exceptional. I presume it accounts for the “71 over height” quoted in the heading to this paper, who can scarcely have been rejected on purely *medical* grounds for that particular form of inefficiency.

It is interesting to enquire how this state of things has come about. Lieutenant-Colonel A. F. Russell, C.M.G., R.A.M.C., has

suggested to me, and I find on enquiry he is right, that originally, and, in fact, up to fifteen years ago, attestations were made out for the Army generally, and on the second page the medical officer signed as to "fitness" or "unfitness" for the Army. Of late years, owing to varying conditions of service, attestations are made out for the different arms, and questions asked on the first page render the form unsuitable for any but that particular corps. On the second page, curiously enough, the medical officer still signs "fit" or otherwise for the Army; but I have often wondered what would happen if he acted strictly in accordance with the letter of his rights and passed a man attested for cavalry, but under height or chest for that branch of the Service, as "fit" for the Army generally. It is evidently an instance of one of those frequent survivals of things once useful but now obsolete, like the buttons on one's dress-coat.

A simple change in the Recruiting Register appears to me enough to remedy this particular incongruity, namely, the addition of a column "fit" for the Army but not for the corps for which attested. Or let us go back to ancient traditions, pass men for the Army and leave on the recruiting officer the onus of rejecting the man for his corps on the medical details given on the second page.

There is, too, a wider view to be taken of the untrustworthiness of our recruiting returns. In the past three years or so there has been a great outcry regarding the physical degeneration of the race, and the recruiting returns have been largely quoted as substantiating evidence of deterioration. It should, however, have been obvious that the recruit, being drawn from a particular and not a representative class, renders arguments based on these returns illusory, while, on the other hand, the fact that medical inspection of recruits is a secondary inspection after primary weeding out by recruiters, makes the proportion of rejections lower than it otherwise would be, and I think the recruiting returns are shown to be still more fallacious as a base on which to rear statistics of national physical efficiency by the considerations I have brought forward, and particularly by the suggestion that many hundreds of men are yearly rejected as *medically* "unfit" on purely technical grounds, which have no relation to health or physical efficiency whatever.

QUININE IN MALARIAL FEVER.

BY LIEUTENANT-COLONEL F. H. TREHERNE.

Royal Army Medical Corps.

It is a question that has been much discussed, whether the effects of the issue of quinine to troops as a prophylactic against malaria justify the trouble and expenditure it involves; whether the benefits which result when quinine is given as a preventive are sufficiently marked to clearly indicate the course that medical officers should adopt at malarious times of the year. The majority of medical officers hold the opinion that the issue of quinine is of decided value, as well as being the only available method of protecting the men on active service when operating in malarious districts. Others recommend the issue, not because they have studied the method of action of the drug and have decided in its favour, but because, being a recognised measure, they think it might be of value, while all who have had to carry out the undertaking will agree that the difficulties which arise in the administration are often very great. It is impossible to effectually carry out the issue to every man in a regiment, unless the medical officer responsible is sufficiently energetic and lays out a definite plan, which is supported by the officers of the regiment, and by which no man can escape swallowing his dose. So many men are on duty at the time selected for the parade, and so many men are anxious to avoid the dosage for various reasons, that unless the medical officer devotes his energies to the utmost to the carrying out of his object, the complete issue to the regiment will undoubtedly fail. "The soldier is often suspicious as to the disinterested nature of any kind of innovation which affects himself, when the proposal comprises arrangements which interfere with his comfort and convenience. His resentment is aroused to an extent which prompts him to nullify by every means in his power measures which are designed with a view to his benefit" (Lieutenant-Colonel Caldwell).

The regulations (I.A.R., vol. vi., para. 138) lay down that quinine and other medicines may be issued as prophylactics to the troops for such periods as may be sanctioned by the officer commanding the station. On one occasion, when it was considered necessary to recommend the issue, sanction was readily obtained from the officer commanding, on condition that no man was compelled to swallow the drug against his will. All arrangements were made and a

scheme drawn up by which 10 grains should be given on two consecutive days to each man every ten days. On the first day it was decided that the whole regiment should parade for the advantages of the issue to be fully explained to the men. Accordingly the regiment paraded under the colonel commanding. The medical officer explained in a few words, and in as simple language as possible, how malarial fever could be prevented if the men willingly carried out the measure proposed. Then the colonel supported the medical officer, urging them to follow the good advice given, at the same time pointing out that there was no compulsion, and that those men who conscientiously objected to swallow the quinine would be allowed to return to barracks. All men who objected were then told to "fall out." The whole regiment "fell out" with the exception of about twenty men! The result of the scheme on this occasion was, therefore, most disappointing, but it showed, as Colonel Caldwell states, how intensely suspicious soldiers are of any measures which are designed for their own benefit.

But the point to decide is, whether the advantages of the issue are sufficiently great to justify compulsion. Andrew Duncan has pointed out that there is a vast amount of evidence from all parts of the world in favour of the regular dosage by quinine as a means of preventing men from suffering from malaria, and also that there is a certain amount of evidence showing that it is futile. He quotes the two Ashanti wars and the Malay war of 1875-6, when the medical officers did not find the practice of any value; while in the Gambia expedition the men who took quinine had as much fever as those not taking it. Dr. Beringer, of the Colonial Service, found the practice of no value, both in Hong Kong from 1900 to 1902 and in West Africa. In the former case he gave 5 grains of quinine every morning to the European troops, and later 10 grains per diem on three consecutive days every week, with the result that there was no effect upon the number of cases of malaria that came under treatment. In the latter case, he saw several cases of malaria in men who had taken quinine regularly.

The intracorporeal or human cycle of the malarial parasite is well known. The sporozoites introduced by the mosquito enter the red blood corpuscles, they gradually mature, and at the end of forty-eight hours (with the common variety) sporulation takes place; at the time of the rigor the corpuscles burst, setting free in the liquor sanguinis the spores and clumps of pigment, the phagocytes quickly absorb the pigment and many of the spores, and finally, those spores which escape the phagocytes, attach themselves to and enter

other red corpuscles, and the process begins again. Two points will be noticed in this process—(1) the utility of the phagocytes in getting rid of the spores, and (2) the very brief period that the spores are free in the liquor sanguinis. With regard to the latter, Stephens and Christophers have pointed out that “parasites free in the plasma are practically never seen.” The explanation usually accepted as the cause of the rigor, is that a toxin is liberated at the time the sporulating bodies are breaking up, and the ruptured red corpuscles have set free their contents.

Now the effect of the quinine is to arrest the movements of the white corpuscles, and in large doses to actually destroy them. It apparently has a most deadly effect on the malarial parasite. Without doubt it causes the parasite (with the exception of the crescent bodies) to disappear from the blood of the human subject. “It is said by some to be most effective against the free spores and the very young intracorpuseular forms, but it is inoperative against the more mature parasites; hence they advocate giving it early in the parasitic cycle. Others, on the contrary, maintain that it is operative only on the large intracorpuseular forms, and therefore advocate its use at a late stage of the cycle” (Manson). Practical experience in the treatment of the disease seems to indicate that the former view is more likely to be correct and hence is the more generally accepted doctrine, viz., that the parasite is more readily destroyed by quinine just before the onset of the rigor, when the spores are free in the liquor sanguinis. Ross maintains that quinine should be given as early as possible in an attack of ague, whether the patient has fever or not. And Manson rules that in the grave forms of the disease it is necessary to administer the drug at once and not wait for a remission.

When the blood is infected with the malarial parasite it takes about ten days before an ague fit sets in. During this time (taking into consideration the tertian variety, by far the commonest form of the disease) the parasites are becoming more and more numerous every forty-eight hours, until they are sufficiently numerous to produce enough “toxin” to cause an attack of fever. If quinine be present in the blood at the “correct” hour of the day, namely, when the sporulation is taking place, the result that would be expected would be the complete destruction of the infecting agent. But it is maintained that the period the quinine remains in the blood of sufficient concentration to effect the destruction is very brief. As sporulation takes place at different hours in different individuals, so quinine must be given at different hours in each case. At the “quinine

parades" sometimes it is given when the spores are free, when it is of use; at other times it passes through the blood without producing any effect, because the spores are not free. The conditions—(1) *free spores in the blood*, and (2) *quinine in the blood*, must coincide to effect a cure, and this coincidence only takes place (since their existence in the blood is so short) in a small proportion of cases, when quinine is given on parade. It is this fact which has given rise to such varied opinions as to the value of quinine as a prophylactic.

It must be in the experience of many that the attacks of ague may continue with great regularity, notwithstanding the frequent administration by the mouth of large doses of quinine, sufficiently large to produce symptoms of cinchonism, proving that the drug has been absorbed. Yet directly the drug is introduced intramuscularly the attacks cease. This experience seems to prove that the doses must have been given at a wrong hour of the day, and that elimination of the drug has taken place before the spores are free and capable of being attacked by it. Directly the quinine is introduced in the muscles its absorption is gradual, and consequently the presence of the drug in the blood might be detected when its action is likely to have a beneficial effect. For this reason the intramuscular injection of quinine is regarded as being by far the most effectual and economical method of treating ague, though the discomfort it sometimes produces at the site of the injection is, perhaps, an objection to its general adoption.

If small doses be administered the period the drug is in the blood is correspondingly small. When larger doses are given it is natural that the process of elimination will be prolonged. If the large dose be repeated on two consecutive days the chances are greater for the spores to be "caught"; but even with these large doses the quinine might be eliminated before it can produce the effect desired. It would appear to be more scientific not to saturate the blood by large and frequent doses of quinine, which have the effect of producing various symptoms of cinchonism, which destroy the white corpuscles, the natural protectors, by whom many parasitic spores are consumed, which the men resent taking, adopting many methods by which they may escape a duty which they cannot understand, and which the medical officers find so difficult to effectually administer. It appears to be better to await the onset of the fever, and attack the disease as soon as it has declared itself.

In support of this, as an additional argument against the dosage of quinine before it is known if the blood is infected or no, it is

well known that old soldiers, who have previously suffered from ague, resent taking quinine "before they are ill," as they declare that it brings on an attack of their "old enemy." And strange as it may seem, this, in some cases, is undoubtedly true, for it has frequently been noted that quinine sometimes wakes up latent malaria and brings on an attack.

The following points have been noted during the recent outbreak of malarial fever at Rawal Pindi:—

Prophylactic Quinine Useless.—When given as a prophylactic, the quinine apparently had no effect in reducing the number of cases.

Multiple Infection.—The majority of men suffered from benign tertian ague, and a large number were apparently reinfected night after night, so that the attacks were generally repeated daily, and in many cases the fever commenced at varying times of the day.

Period of the Day at which the Ague Commenced.—The majority of attacks occurred between noon and sunset. This does not agree with Manson's statement that "two-thirds of agues come off between midnight and mid-day." This seems to point to the fact that after the mosquito has pierced the skin and introduced the sporozoites, these do not find their way into the blood corpuscles for some hours, it being assumed that the most frequent hour of inoculation is just before daybreak.

Intramuscular Injections of Quinine.—When quinine was given in 10-grain doses by the mouth on the morning after an attack, it appeared to have little effect upon the course of the disease. But when given intramuscularly it had a marked effect upon most of the cases.

Quinine in Malignant Cases.—The disease did not yield readily to quinine, given either by the mouth or intramuscularly, when the infection was of a malignant type.

Best Time for Intramuscular Injections.—When quinine was injected during or soon after a rigor it did not prevent subsequent attacks in the majority of cases, but when given an hour or two before the rigor came on, though it appeared to have no effect on the coming attack, yet in a great many cases no further fever was experienced. This latter fact seems to bear out the principles set forth above. The quinine in the blood killed the spores which were set free at the time of the rigor, while the toxin set free at the same time (on which the quinine had no effect) caused the fever. Then, there being an insufficient number of spores capable of producing the toxin, no more fever set in.

Conclusions.—Taking into consideration the views above expressed, it is not considered that the advantages are sufficiently great to justify the issue of quinine as a prophylactic to troops in malarious districts.

As a routine measure, when it is difficult to determine the exact hour of the commencement of the fever, it is better to treat the disease by intramuscular injections of 8 grains, one to be given in the evening, and a second injection twelve hours afterwards.

The continual dosage by quinine in 10-grain doses, morning after morning, as is sometimes adopted, cannot be too strongly condemned, as it has the effect of destroying the white corpuscles of the blood, and if the spores are not free at the time of administration the drug will have no effect on the parasite.

For the successful treatment of ague a four-hourly temperature chart should be kept, so that the exact hour of the commencement of the fever can be noted, and quinine given one hour before the next expected rise, and only at that time.



Clinical and other Notes.

A CASE FOR DIAGNOSIS.

BY CAPTAIN L. BOUSFIELD.

Royal Army Medical Corps.

THE following case is one of the most worrying that has fallen to my lot to have to diagnose, for it was absolutely imperative to make a diagnosis in as short a time as possible, so as not only to settle on the line of treatment but also to give a prognosis. The history elicited from the patient, the signs and symptoms, together with a photograph of the condition on the third day after coming under treatment, are included, and they are submitted as a problem to any reader who may care to determine what course he would have taken with regard to treatment, isolation, disinfection, &c., and if there were any further questions he would have asked to enable him to arrive at a definite diagnosis.

The answer to the problem will appear in next month's Journal.

The patient, aged about 26, the wife of a sergeant, reported sick one morning at an inspection room in Malta, complaining of a painful swelling on her chin. She had noticed it coming two to three days ago, but could give no definite account as it had appeared gradually. She was, however, certain that she had received no blow or wound on her chin.

Physical Examination.—There was a large, diffuse swelling on the left side, extending from the apex of the chin to behind and below the angle of the jaw on that side. Its centre presented a small bleb, surrounded by a hyperæmic area, and outside this there was much brawny induration. The swelling was painful, hot, and very tender. There was no sign of an external wound or abrasion, no ulceration of the gums or buccal mucous membrane, and there were no carious teeth; the maxilla was not diseased and there was no alveolar abscess, the morbid process being restricted apparently to the skin and subcutaneous tissues. The patient said she felt "out of sorts" but not really ill; she was very anæmic, and had a temperature of 100° F., with a pulse rate of 84. There were no other physical signs of disease.

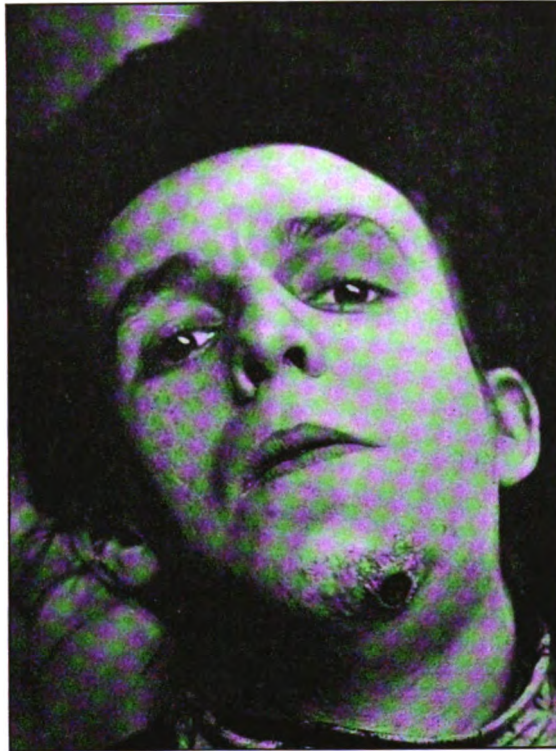
Previous History.—She had not suffered from any illness for several years, and had never had a similar condition to this attack.

Habits.—Her own home work was her sole occupation, she did no work outside her own house, nor did she do washing, &c., for others. She did not wear a fur boa.

Family History.—Her husband and children were quite healthy, and I inspected them myself and found them in robust health. Her husband had nothing to do with cattle or horses.

The condition was diagnosed as one of septic infection of the cellular tissue through a small abrasion in the skin, and, in consequence, an incision was made through the bleb into the subcutaneous tissue, and she was ordered hot boracic fomentations every three hours, an aperient, and an iron tonic.

The following morning she appeared worse, the temperature was 101° F., and the swelling more pronounced. The original bleb had gone,



its site being now occupied by a dark-coloured scab, which was surrounded by two or three small vesicles. She stated she had felt unfit to eat solid food and had only taken a little milk since the previous morning. Some of the vesicles were pricked, and the clear serous fluid examined microscopically, but I could find no bacteria. Some fluid was spread on agar slopes and incubated at 37° C. Blood examination showed no leucocytosis, and the urine presented nothing abnormal. The same treatment was continued, though only a little sero-sanguineous fluid appeared on the fomentations.

That afternoon the condition showed no improvement, and on the following morning the swelling showed no signs of getting smaller, while the centre had become a dark brown, almost black, eschar surrounded by a large number of vesicles (see photograph). Some fluid from the vesicles was again examined microscopically, with no result, and there was no growth on the agar slopes which had been inoculated the day before. She presented no new physical signs, but still had a temperature of 101° F., and was evidently far from well.

I showed the case to several of my brother medical officers, but none of us could arrive at a definite diagnosis. The case was causing much anxiety, but, fortunately, during the day the means of arriving at a correct diagnosis dawned upon me.

A CASE OF FATAL GUNSHOT INJURY OF THE SPINE FROM A MORRIS TUBE BULLET.

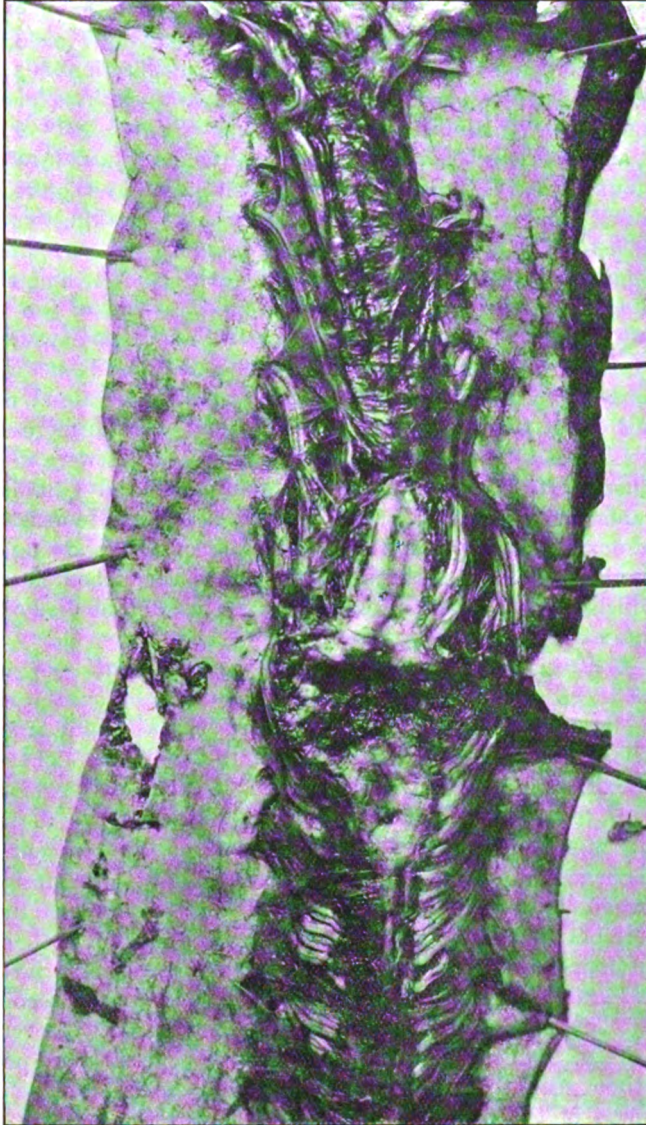
BY MAJOR E. W. BLISS AND CAPTAIN H. D. PACKER.
Royal Army Medical Corps.

PRIVATE B., Middlesex Regiment, was brought to hospital at 10.30 p.m., May 17th, 1907, suffering from a bullet wound on the right side of the neck, inflicted by a Service rifle fitted with a Morris tube. He was very drunk and struggled considerably, moving his arms and legs freely. His pulse, temperature and respirations were normal; the pupils were equal and somewhat contracted, and there was no sign of paralysis, and no interference with articulation. There was a small punctured wound on the right side of the neck passing through the anterior part of the trapezius and on in the direction of about the fifth cervical vertebra. The edges were slightly contused, but there was no sign of powder blackening, and no wound of exit. A probe could be passed $1\frac{1}{2}$ to $1\frac{3}{4}$ inches in the direction of the fifth cervical vertebra, but no bullet could be felt either with a probe or on palpation from outside. The wound was cleansed and dressed, and the patient put to bed. At that time patient's condition did not appear to be at all serious.

Seen at 8 o'clock on the 18th (ten hours after receipt of injury), his temperature was subnormal, pulse 68 and respirations 14. His legs were completely paralysed and there was marked weakness in both deltoids and triceps, and in all extensor muscles, of both arms and forearms. He had retention of urine with overflow, incontinence of fæces, and a tendency to priapism. Anæsthesia was well marked over the lower limbs, abdomen, and chest up to the level of the nipples. There was no zone of hyperæsthesia. He was quite conscious and had no pain, but he had developed a slight cough.

At the first opportunity three X-ray pictures were taken; in the one

the plate being placed beneath the patient's neck and shoulders, and the other two being taken from the side. The one taken posteriorly showed a broken-up and lodged bullet; one fragment appeared to be in the substance



of the cord about the level of the fourth cervical vertebra, but whether anterior or posterior to, or in the substance of the cord, it was impossible to say, as neither lateral pictures showed anything, both being taken at

a somewhat too high level—this difficulty being due to the shoulder preventing the plate being pushed far enough downwards. The bulk of the bullet appeared to be lodged in the bone at the level of the fifth cervical vertebra on the left side, and in the region of the articular process.

He remained much the same during the day, but by 7 o'clock in the evening his temperature had risen to 100° F., respiration 20, pulse 76, and his cough had increased, and there was scanty frothy expectoration. His temperature remained up between 100° F. and 101° F. till the next day, and, as there was some redness and tenderness about the wound of entry, under A.C.E. the wound was enlarged and explored. Some blood-stained pus and three small fragments of clothing were found and removed. The wound was explored down to the vertebræ, but no loose fragments of either bone or bullet could be felt, and the bullet appeared to have passed through to the opposite side of the vertebræ. As patient's condition under the anæsthetic became somewhat critical, nothing further was done, and he was taken back to bed. He rallied satisfactorily from the operation and his condition remained much the same until about 6 p.m., when his respirations became more laboured, the cough increased, and a large number of moist râles were to be heard in his chest. He was placed in a steam tent, and stimulants and expectorants were exhibited. His breathing became increasingly embarrassed during the night and early morning of the following day, and about 9 p.m. on the 20th his respirations became very laboured and jerky, he was much cyanosed, his pulse rapid and feeble, and he died of respiratory failure at 10 a.m. the same day.

Post Mortem made Twenty-eight Hours after Death.—A wound of entry was to be seen posterior to the sterno-mastoid on the right side about the level of the fifth cervical vertebra. It passed inwards through the anterior fibres of the trapezius down to the spine. There was no wound of exit. An incision was made from the spine of the sixth dorsal vertebra to the forehead, dividing all the tissues down to the bone. The brain was removed by the ordinary method, and, except for considerable congestion of the blood-vessels, was found to be normal. The upper portion of the spinal cord as far down as the level of the second dorsal vertebra was exposed by dividing the laminæ on both sides. It was then found that there was considerable extra-dural hæmorrhage which had gravitated from the level of the wound to the second dorsal vertebra. This portion of the cord and its membranes were removed in their entirety, and the dura opened from top to bottom posteriorly. It was then seen that there was considerable intra-dural hæmorrhage at the levels of the fifth and sixth cervical vertebræ, and at the level of the fifth cervical vertebra the posterior columns of the cord had been transversely grooved by the bullet to the depth of about $\frac{1}{3}$ of an inch,

and a fragment of the bullet about the size of a hemp seed was lodged in the substance of the cord on the left side at about $\frac{1}{4}$ inch higher level. Ragged wounds of entrance and exit were to be seen in the dura—the latter being the larger—and the main portion of the bullet, which was considerably broken up, was found lodged on the internal and superior aspect of the transverse process of the fifth cervical vertebra on the left side. On clearing the bone in this situation some splintering was found to have taken place. Except for some acute alcoholic gastritis the *post mortem* did not disclose any other points of pathological interest. The accompanying photograph of the cord shows the lesion.

The case is submitted for publication as it is considered to be of considerable interest to military surgeons. It well shows what considerable injury the cord may sustain in its posterior columns without giving rise to any early signs or symptoms enabling one to determine whether any lesion of the cord has taken place. In this case, although the cord itself was wounded, the paralysis did not ensue for some hours after the receipt of the injury, and therefore would appear to have been due to the pressure caused by slowly collecting blood setting up a "gravitation paralysis." It further shows how guarded one should be in one's prognosis, and that an early operation undertaken for the relief of pressure upon the cord caused by extravasated blood would frequently prove unsuccessful owing to the presence of an unsuspected lesion of the cord itself.

A CASE OF KALA-AZAR CONTRACTED IN CRETE.

BY CAPTAIN G. J. STONEY ARCHER.

Royal Army Medical Corps.

LANCE-CORPORAL S., 2nd Royal Sussex Regiment, aged 24, was admitted into the Military Hospital, Belfast, on April 21st, 1907, complaining of being unable to walk any distance, or do any work, on account of great general weakness. He stated that he had been suffering for some time from attacks of ague, which he had contracted in Crete, and he thought that this was the cause of his condition. He looked rather emaciated, and his skin had a yellow tinge, but the conjunctivæ were quite clear and free from this colour; his temperature was 99·8° F., pulse 86, respirations 20; tongue slightly furred, but moist. He stated that his appetite was good and that his bowels moved regularly. On examination, the heart and lungs were found normal, and the liver enlarged, coming about 2 inches below the costal margin in the right nipple line. The spleen was also enlarged, and its notch could be distinctly felt below the left costal margin. The blood was examined for malarial parasites with a negative result, and this examination was repeated on several occasions, but the plasmodium was never found. When examining the blood films, it was noticed that the polynuclear leucocytes were very few in number, and that there was a general leucopenia.

Patient's Previous History.—Enlisted at Chichester on January 13th, 1904; he had previously lived in Plymouth. Left England for Malta on June 28th, 1904; transferred to Crete May 28th, 1906. While he was in Malta he enjoyed good health, and in Crete was also quite well till September, 1906, when, he states, he had his first attack of ague, and he considered that he contracted it while going through a course of musketry, which was carried out on some marshy ground near Candia. The first attack was not severe, and he did not report sick until October, when he attended hospital for five days; from this time on he suffered from what he thought were slight attacks of ague till January 26th, 1907, when he had a more severe attack and was admitted into hospital at Candia, his medical history sheet showing this admission for "ague." It would be interesting to know if the malarial parasite was found in his blood at this time. He was discharged from hospital on February 9th, but since that time he has not felt well, though he had been able to carry on his duties. He came home from Crete with his regiment on February 26th, 1907, and was admitted into the Military Hospital, Belfast, as before mentioned, on April 21st.

Although no malarial parasites were found in his blood, the condition for some time was considered to be chronic malaria and quinine was given in various doses, but, though it had some temporary effect in reducing the temperature, it did not prevent the recurrence of a high irregular temperature which commenced a few days after admission. His urine was frequently examined and was usually found normal, but occasionally it contained traces of albumen; the bowels have moved regularly, there has never been any hæmorrhage, the spleen and liver have gradually continued to enlarge, and though his appetite has been excellent and his digestive functions good, he has lost flesh rapidly. In the beginning of June he complained of some tenderness in his liver on palpation, and as his temperature was somewhat hectic in character, a dysenteric infection of the liver was thought of, in spite of the leucopenia which was present, and he was given a few doses of pulv. ipecacuanhæ, as recommended by Rogers in the *Practitioner*, but this drug proved to be of as little value as the quinine. Being very anxious about the case, on June 12th I sent films and capsules of the peripheral blood to Major W. S. Harrison, R.A.M.C., at the Royal Army Medical College, who very kindly examined them for me, and reported that the serum did not react to either the *Bacillus typhosus* or the *Micrococcus melitensis*, and that no malarial parasites were found in the films, but, on the other hand, that there was a marked leucopenia, and that a census showed the following:—

Polynuclears, white blood corpuscles	26·6 per cent.
Large mononuclears	43·3 ..
Lymphocytes	22·7 ..
Eosinophiles	1·2 ..
Myelocytes	6 ..

Major Harrison also suggested that I should send him some films of blood obtained from the spleen and liver by puncture, as the condition was very suggestive of some protozoal infection, probably kala-azar. Accordingly, on Tuesday, June 17th, I obtained these specimens under the strictest aseptic conditions, and posted them to him the same day; on the following day I received a wire saying that the kala-azar parasites had been found in the spleen films.

Patient's Condition at Present Time.—He is very emaciated, the skin has a marked yellow tinge, but the conjunctivæ are still clear. He is confined to bed as he is now too weak to sit up in a chair, and he is provided with an air-bed. The chief bone prominences are rubbed twice daily with equal parts of olive oil and methylated spirit, which I have found an excellent combination for hardening the skin. He is taking half an ounce of extract of malt and cod liver oil three times a day, and is given 3 grains of atoxyl in a saturated sterile solution hypodermically; his appetite is very good, tongue is moist and only very slightly furred. He is quite cheerful and hopeful, and even in the evening, when his temperature is usually high, he appears to suffer little or no discomfort. The abdomen is distended and the liver is now very large; in the right nipple line the dulness extends from the sixth rib to the level of a line drawn through the umbilicus, a distance of 7 inches. The lower edge of spleen comes as far down as a line drawn from the left anterior superior iliac spine to the navel, and the splenic notch can be felt 3 inches to the left of this latter landmark; the upper limit of splenic dulness reaches to the eighth rib. Knee-jerks are very sluggish, and cremasteric reflex is present; no ankle clonus; plantar reflexes are flexor. Pulse rapid, regular, moderately full but easily compressed; artery walls soft. Feet and ankles are somewhat cedematous, feet lie straight down in bed, and he has some paresis of the extensors of the foot, accompanied by some contraction of the flexors. The lymphatic glands are just palpable in both groins; in other parts of the body they are not noticeable. He has lately developed a slight cough, and a few râles and rhonchi can be heard over the base of both lungs behind. He still suffers from attacks very similar to ague, with cold, hot and sweating stages, but examination of the blood, taken during these stages, shows no sign of the malarial parasite. The last complete examination of his blood was made on June 24th, with the following results:—

Hæmoglobin	..	..	..	..	..	54 per cent.
Red cells	..	..	..	..	..	2,800,000 per c.mm.
White cells	..	..	..	..	..	2,900.
Polynuclears	..	..	..	..	..	32 per cent.
Lymphocytes	..	..	..	..	..	37 „
Large mononuclears	..	..	..	..	..	26 „
Myelocytes	..	..	..	..	..	24 „
Eosinophiles	..	..	..	..	..	1 „

I am sending the above notes to the Journal as I understand that this is the first recorded case of kala-azar contracted in Crete, and it is therefore of some interest and importance; it also shows the necessity of making a thorough examination of the blood in all doubtful cases of this description.

TWO CASES OF APPENDICITIS OCCURRING SIMULTANEOUSLY IN MASTER AND SERVANT (AN INTERESTING COINCIDENCE).

By MAJOR S. F. GREEN.

Royal Army Medical Corps.

ON Christmas Day, 1905, Private H., of the 2nd Hampshire Regiment (who had seventeen years' service, and had been servant to Captain A., of the same regiment, for five years), was admitted into the Military Hospital, at Prospect, Bermuda, complaining of pain in the right iliac region, and of suffering from frequent headaches. He looked seedy, but nothing could be found on examination to account for the pain in the iliac region. During the first few days he was in hospital he had an occasional rise of temperature to a little over 99·0° F. After a few days' rest, careful dieting, and medicinal treatment, consisting of aperients and salol, he had improved considerably, had lost all pain in the abdomen and headaches, and was sent back to duty. Private H. stated that this trouble of his had originated in Malta six months previously.

On July 22nd, 1906, Captain A. was placed on the sick list, suffering from a very acute attack of appendicitis, this attack having originated a few days previously on board ship while he was on his way out from England, where he had been on leave. He had suffered more than once previously from a similar condition in Malta, where, it appears, he had his first attack about twelve months before; but none of these attacks had been anything like this in severity. Captain A. was admitted into hospital, and after the subsidence of his acute symptoms, was operated on and the vermiform appendix removed. The operation wound healed by first intention, and on September 18th, after a few days' "convalescent exercise," he was taken off the sick list, having made a very good recovery. He was soon able to take part in all his ordinary duties, and also to play all his usual games, such as tennis, football, hockey, &c.

At the end of January, this year, Captain A. wrote me a note, asking me to kindly see his servant (Private H.) again, as the latter was very seedy, and had, ever since leaving hospital at the beginning of 1906 (over a year), been suffering periodically from pain in the abdomen, and also from frequent headaches and constipation, but did not like to report sick. The pain in the abdomen (right iliac region) had lately been much worse, and was of a dull, aching character. On physical examination, I found that on making deep pressure over the region of the appendix the

patient complained of tenderness. Between the date of his admission into hospital and the date of his operation, his temperature rose to 100·0° F. only on one occasion, but as a rule it varied between 99·0° F. and normal. Colonel Rainsford, C.I.E., Principal Medical Officer, and Dr. Trott, F.R.C.S., very kindly saw the case in consultation with me, and both agreed with me that the pain was in all probability due to some abnormal condition of the vermiform appendix, and that it was advisable to make an exploratory incision, especially as the man himself was very anxious to undergo an operation, and had been troubled and worried by this condition for so long (over eighteen months). On examining *per rectum*, I distinctly felt the enlarged appendix, which was tender to pressure made on it with the finger. The case was operated on and the vermiform appendix removed. The wound healed by first intention, and the patient made a rapid and uninterrupted recovery, steadily improving in general health and appearance. The condition of the appendix, as seen after removal, amply justified the operation. It was about 4 inches long and felt very hard. About $\frac{3}{4}$ inch from its attachment to the cæcum there was a constriction, and the mucous membrane lining the whole of its interior was much thickened, œdematous and red. From the constriction to the distal end the appendix was filled with yellowish-brown faecal matter of the consistence of thick paste.

My thanks are due to Lieutenant-Colonel G. E. Weston, R.A.M.C., for his kindness in allowing me to publish this case, and also to Colonel W. J. Rainsford, C.I.E., for his kind assistance at the operations.

THE TREATMENT OF SCABIES BY BALSAM OF PERU.

BY LIEUTENANT-COLONEL W. J. BAKER.

Royal Army Medical Corps.

HAVING read the articles by Lieutenant-Colonel S. C. B. Robinson and Major F. J. W. Porter, D.S.O., in the January and February numbers of the Corps Journal for 1907, on the above mode of treating scabies, I determined to give the method a trial in the Military Hospital, Arbor Hill, where all cases of the disease occurring in the Dublin garrison are sent for admission, and the results of which may be found of interest. Up to the present time sixty cases have been treated on the lines recommended, and in none of these has there been any relapse.

As a precautionary measure the urine is examined before, and at intervals after, the application, but in no case has any albuminuria resulted. I do not think this complication is likely to arise unless the case is a very aggravated one, with a large absorbing surface, due to the irritation caused by the acari, and the subsequent effects of scratching. In such a case the remedy should be applied with discretion.

The preliminary essential is undoubtedly the hot bath, efficiently

carried out. The skin is then well dried, and the balsam applied as directed. Major Porter recommends the addition of glycerine to the balsam in the proportion of 1 to 3. I, however, prefer the balsam alone, as it appears to me to dry on better than when mixed with the glycerine.

I am quite convinced that this is the best and most efficacious remedy we have at present. That the acari are at once killed is shown by the immediate cessation of the itching, and the fact that there has been no relapse, though the patients have been kept under observation for lengthy periods, seems to prove that the ova are destroyed at the same time as the acari.

Major Porter in a subsequent clinical note which appeared in the *British Medical Journal*, considers that the long period during which baths were at first forbidden is unnecessary, and that a bath may be allowed twenty-four hours after the application of the balsam. I concur in this, as given that the preliminary bathing and subsequent application of the balsam are efficiently carried out, the disease is cured then and there, and in only a very small proportion of cases will a second (localised) application be necessary.

The majority of cases might, I think, safely be discharged from hospital as soon as their clothes have been disinfected, but a few days further detention is usually advisable to allow the skin to recover from the irritation caused by the parasite. The rapidity and completeness of the cure is demonstrated by the fact that in some half a dozen cases where scabies developed in hospital subsequent to admission for other complaints the disease was treated as above in the scabies division, the men being then given clean clothes and returned to their wards within twenty-four hours, and in no case was there any relapse. The only drawback to the remedy is its cost, viz., about 2s. for an application of from 3 to 4 ounces of the balsam. This, however, is counterbalanced by the short time during which patients need be detained under treatment, and by the saving in fuel in preparing the numerous hot baths necessary in the sulphur ointment mode of treatment in hospitals where hot water is not laid on to the scabies bath-room.

I may add that I have also found the balsam very efficacious in the treatment of ringworm.

DANGER OF THE STARCH AND OPIUM ENEMA TREATMENT OF INTestinal HÆMORRHAGE.

BY LIEUTENANT C. RYLEY.

Royal Army Medical Corps.

WITH regard to the treatment of hæmorrhage from the bowel of starch and opium enemata, which in many hospitals seems almost routine, I have on several occasions, seen the administration followed shortly by severe tympanites; in one case leading to reflex cardiac embarrass-

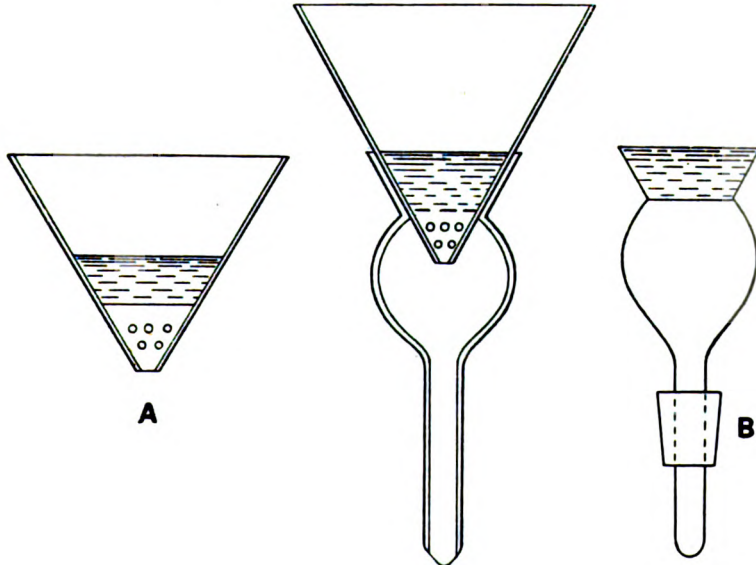
ment and death. The dose of opium in this case being 25 minims of the tincture, which, I think, is not excessive for a rectal injection. This inflation is, I think, partly due to paralysis of the rectum by the drug, with consequent inability to expel flatus, and partly to fermentation of the starch causing a rapid evolution of gas. I was able to prove the latter theory by incubating 4 ounces of starch, to which a little fæces had been added, at body temperature, attaching a receptacle to catch the gas evolved. In a few hours the collection was full of carbon dioxide, and the starch swarming with yeast fungus and *Bacillus coli*. In my opinion, therefore, starch is a very unsuitable vehicle, and the opium is much more likely to reach the required spot in the ileum *via* the mouth.

A NEW FORM OF FILTER FUNNEL.

By MAJOR W. W. O. BEVERIDGE, D.S.O.

Royal Army Medical Corps.

WHEN filtering with water-pressure by a filter pump, it is necessary to have either a porcelain or platinum perforated cone at the bottom of the filter funnel to prevent the filter paper being ruptured by the



force of the suction. The porcelain cones prevent the paper lying accurately in the funnel and those of platinum are expensive, and, moreover, liable to be dissolved by certain reagents.

I have designed a glass filter funnel which does away with the necessity for a cone, and can be used both for ordinary filtration and with pressure. This has been made for me by Messrs. Townson and Mercer, from whom it can be procured.

The funnel is made in two pieces. A is the actual funnel, the apex of which is drilled with small perforations; in this the filter paper lies, being accurately fitted and evenly supported, so that it cannot be ruptured by the pressure from the filter pump. The funnel fits into a lower piece or stem B by an accurately ground union. This stem has a thistle-shaped expansion which has the effect of increasing the rate of flow of the filtrate through the filter.

The advantages of this form of funnel are: (1) It requires no cone, the apex of the funnel being sufficiently perforated; (2) being in two parts it is easily cleaned; (3) rapidity of filtration; (4) it can also be used as an ordinary funnel or for filtration with glass wool, which can be placed in the thistle; (5) it can be easily sterilised.

THE WATER-BOTTLE—A SUGGESTION.

BY LIEUTENANT R. G. H. TATE.

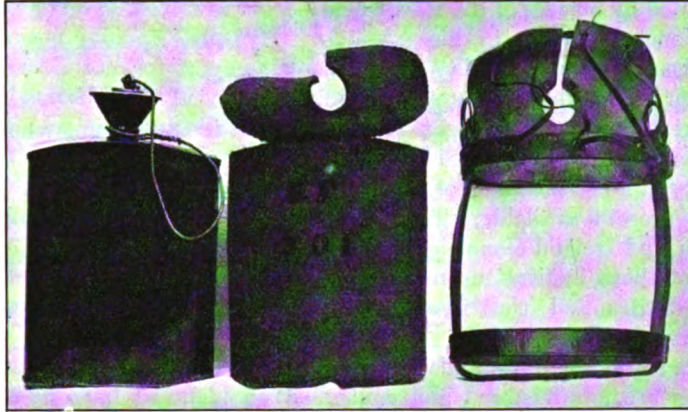
Royal Army Medical Corps.

WHEN we look round at the various devices with which we are supplied for obtaining pure water for drinking purposes, we cannot help being struck by the fact that so little has been done to provide the soldier with a satisfactory receptacle for carrying his portion of drinking water in a cleanly state when on the march. The great importance of having a bottle which can be easily cleansed was well brought out by the article written by Major Norman Faichnie in the March number of this Journal, and the object of this present note is to describe an effort made, though on a less elaborate scale than that described therein, to provide troops with a bottle which can be easily sterilised.

One of the new pattern water-bottles was taken from its cradle straps, and its felt covering, ripped open along the upper seam, was removed. The covering was then stretched sufficiently to allow the bottle to be easily slipped in and out of it by forcing slips of wood between it and the bottle, which had been replaced in its original position. This having been done the edge of the felt was strengthened by a strip of thin leather along its inner surface and the top of the cover was fastened to the body along its convex edge, as shown in the photograph. The cradle straps were then taken and the upper horizontal strap was raised about an inch on the side straps, a flap of leather, shaped as shown, being stitched along the inner side of the straight portion. Eyelet holes were then fitted in the edges of the leather flap and in the top strap of the cradle. To put the whole together, the bottle was placed in its felt cover, the top of

which was folded into its original position, the cradle straps being pulled up into place over both. The leather top flap was next brought over and fastened down by a strong lace passed through the eyelet holes.

A water-bottle was thus obtained which could be easily removed from all its coverings and boiled. A Soyer's stove will hold twenty-two such bottles at one time and so could sterilise the bottles of 100 men in little



over an hour. If a Soyer's stove is not obtainable, the bottles can be placed on the ground in the usual way for boiling canteens, and, a fire being lighted in the centre, water can be boiled in them.

It may be mentioned that the whole of the above alterations were made in a very short space of time at the cost of a few pence, and so, even if not found of practical value for troops, the description of them may prove of interest to those who wish for a bottle, for personal use, which can be easily cleaned and which costs but little.

THE STATISTICS OF MILITARY FAMILIES HOSPITALS.

BY MAJOR R. J. BLACKHAM.

Royal Army Medical Corps.

THE Army Medical Department Reports are very highly valued by all statisticians, but it seems a remarkable fact that they give no information with regard to the large amount of work in obstetrics which is annually performed by officers of the Royal Army Medical Corps.

Colonel Caldwell, in his "Military Hygiene," points out that no statistics of infant mortality in the Army, as apart for mortality amongst children generally, are available in the official blue-books, but an obstetrical statistician might have gone further and deplored the fact that no records of the large number of obstetrical cases dealt with in the military families hospitals of the United Kingdom, India and the colonies are at present available. This seems a great pity, as there are in Great Britain and Ireland alone eight families hospitals, and the records of the work of these institutions might yield invaluable information to writers on obstetrics, and that new and important branch of State medicine known as Infant Hygiene.

The eight home hospitals have an aggregate of nearly 200 beds, and as they are administered and controlled on identical lines by a central authority, they constitute, for statistical purposes, one huge maternity hospital, almost equalling the aggregate number of beds of Queen Charlotte's, the Rotunda and York Road Lying-in Hospitals. The fact that the hospitals are under the complete medical and administrative control of only eight military physicians makes them still more unified, as I find by this years' *Medical Directory* that the three institutions named have, in addition to the consulting staff, about fourteen medical officers in attendance on the sick, so that individual idiosyncrasy must affect the civilian institution to almost double the extent that it can affect the military hospitals.

The total number of admissions for parturition to the military families hospitals in the United Kingdom alone must, I think, amount to about 1,000 cases annually; yet, although the statistics of civilian hospitals with a total of twelve or fifteen hundred parturitions are quoted with something akin to awe by obstetrical writers, the military statistics, which, if India and the colonies were included, must deal with double this number of cases, have, as yet, found no place in obstetrical statistics.

I suggest that a record of each obstetrical case dealt with in our families hospitals should be kept, and that Army Form A. 16 (Annual Report of Hospitals for Soldiers' Wives and Children) should be altered so as to provide a table giving details of obstetrical work done. A column showing causes of death and death-rate of children under one year should be introduced, and there should also be a table showing the amount of operative work done in the hospitals.

I subjoin a form of record of obstetrical cases in use in the Military Families' Hospital, Devonport. The forms are bound up at the end of the year and form a complete record for scientific reference or statistical purposes. I suggest that a record of this nature might be introduced as an Army Form.

Year, 19		THE MILITARY FAMILIES' HOSPITAL, DEVONPORT.	
Month			
Regiment		Company	
Name		Age	
Admitted		at .. A.M. ... P.M. No. of Pregnancy	
		Period of Pregnancy	
PREVIOUS HISTORY	{ Previous Labours		
	{ Abortions		
	{ Premature		
	{ Full Term		
DIAGNOSIS	{ Abdominal Palpation		
	{ Vaginal Examination		
	{ 1		
	{ 2		
LABOUR AND DELIVERY	{ Labour commenced		
	{ of ... at ... a.m. ... p.m. Membranes ruptured ... a.m. ... p.m.		
	{ Infant born		
	{ Placenta delivered		
PUERPERIUM	{ Date of first leaving bed		
	{ Date of discharge		
	{ 19 ... Condition when leaving hospital		
	{ Day Nurse in charge		
Nurse in charge			
NOTES :—			
INFANT	{ Sex		
	{ Weight		
	{ lbs. oz. Length		
	{ ins. Condition at birth		
{ Mode of feeding			
{ Condition when leaving Hospital			
{ Bowels			
NOTES :—			

Reports, &c.

ANNUAL SANITARY REPORT, 1906—SIERRA LEONE.

BY CAPTAIN A. H. MORRIS,
Royal Army Medical Corps.

I TOOK over charge of the District Laboratory, Sierra Leone, on December 15th, 1905. The work, however, embodied in this report, only properly commenced in March, 1906. The work done consisted mainly of (1) Parasitology, and (2) Water Analysis.

PARASITOLOGY.

(a) *Malaria*.—For the ten months under consideration, the blood of every man coming to hospital at Tower Hill with fever was searched. Of the 387 men examined, 172 had the malarial parasite in the peripheral blood, and of these, 171 were of the malignant tertian variety, one of the quartan, and none of the benign tertian. The malignant tertian form of the parasite, then, is by far the more common. That it is a malignant form of the parasite is undoubted. The red corpuscles are small and frequently crenated. The parasites take the form of small, sometimes minute, rings, each ring having two or three dots of chromatin. Often two, and occasionally three rings are found in one corpuscle. Many corpuscles in one field of vision are seen to be infected. No intermediate forms are seen between these rings and the crescents that are occasionally met with. There are, to my mind, many interesting points to note, if a comparison be made between the malignant tertian fever of Sierra Leone and the malignant tertian fever found in India, or at any rate in the Western Command in India. These points are as follows: (1) It is comparatively yielding to quinine. (2) When treated early, it is the exception to find crescents in the peripheral blood. All the cases having malignant rings in the blood were re-examined at intervals for crescents, and out of 171 cases so examined, in thirteen were the crescents found. (3) Of those comparatively few cases in which crescents were present, in only a small proportion did the crescents persist in the blood under treatment. In quite two-thirds of the cases the crescents disappeared under quinine. On these grounds it seems reasonable to me to suppose that we have in Sierra Leone a different species of malignant parasite to deal with than the one commonly met with in the West of India, and such I firmly believe to be the case. No cases of benign tertian were seen, and only three of quartan, of which two were found in native children. Besides the soldiers who were examined, a considerable number of natives were also seen. In one village in the Protectorate, situated on a swamp, the

blood of every native infant examined contained the parasite—either malignant tertian, or a mixed infection of quartan and tertian.

Fatal Cases of Malaria.—There was one fatal case (not including blackwater fever) during the year. It occurred in a European gunner. Smears and sections taken from the brain and spleen showed a tremendous invasion by the malignant tertian parasite, the capillaries being choked with malarial pigment and rosettes.

(b) *Mosquitoes.*—The mosquitoes conveying malaria here are the *Pyrethrophorus costalis* and the *Myzomyia funestus*. I believe that Major F. Smith, D.S.O., R.A.M.C., found another anopheline—a new species—but I have never been able to find it. Anophelines were found at the beginning, during, and at the end of the rains in the hospital, barracks, and guard-rooms, but they always had to be carefully searched for. They were always easily obtained from the native dwellings in the town. Anopheline larvæ were found in pools in the rocks in the valleys adjacent to Freetown, and in the low-lying rocky situations near the shore. I failed to find any during the dry season, at which time, too, it is exceedingly difficult to get anopheline mosquitoes anywhere except in the native dwellings. Mosquitoes are also found breeding in old bottles and tins in and around barracks. Further mention of this is made in the Sanitary Report by Stations.

(c) *Ankylostomiasis.*—A considerable amount of work has been done in connection with this disease. Since September 24th, 1906, the stools of every man admitted to hospital at Tower Hill were systematically examined for *Ankylostoma* ova. Previous to this date, only the stools of those men having fever not affected by quinine, or having some other symptom suggesting ankylostomiasis, were examined. Of (1) 130 non-European soldiers examined, ova were present in seventy-three cases, showing a percentage of 56.1. Of (2) ten European soldiers examined, in no cases were the ova found. The net result was to show the exceeding prevalence of the diseases amongst the non-European soldier.

Causation.—In what way is this prevalence to be accounted for? I am convinced it is not from the water supply, as I have frequently examined the slight sediment of the Mount Aureol and Tower Hill waters, and have never found any ova in them. Further, the disease is almost entirely confined to the non-European troops, which practically puts the drinking water out of court as a possible agent. I believe the cause to be as follows: (1) Probably a good many cases are imported from the West Indies with the arrival of the battalion. (2) We in barracks live close to a large city of non-European inhabitants. In the Annual Report of the Principal Medical Officer of the Colony for 1904, it is definitely stated that 48 per cent. of the inhabitants of Freetown suffer from ankylostomiasis, these figures having been arrived at from the examination of the stools of a large number of cases.

Freetown is one mass of cess-pits, and during the heavy rains the

faecal matter gets washed out of these, the result being that the soil of the town becomes saturated with sewage. I have several times found the ova and embryos in puddles of muddy water. Besides the married soldier, who lives in the town, practically all the non-European soldiers have families or relatives there, and they are therefore continually in the town. It is not unreasonable to suppose, therefore, that it is in the town the infection takes place.

An experiment showing how long ova could be recovered from water inoculated with a loopful of infected stool was made. This water was examined daily and ankylostome ova were found up to the fifty-ninth day. At the latter end of this period, the ova were very dark in colour, but after the fifty-ninth day they began to disintegrate and finally disappeared altogether.

The result of this experiment seems to show that moist soil contaminated with ankylostome ova may be a source of infection for at least two months, and this is precisely the condition that pertains in Freetown.

Character of the Disease.—In the majority of cases in which ankylostome ova were found the patients presented no symptoms of the disease. Previous to September, when the systematic examination of the stools was begun, in many instances it was not until the routine examination of the blood for malaria revealed a condition of eosinophilia that ankylostome ova were looked for in the stools and found. In some instances, however, the usual symptoms were present, and in a few they were very severe. In one such case there was marked anæmia, high temperature, and tenderness with distension of the abdomen. The symptoms were so severe that they suggested enteric fever, but Widal's reaction gave a negative result. The stools were swarming with ankylostome ova. After a course of thymol the symptoms entirely cleared up, although a few ova were found in the stools.

(d) *Trypanosomiasis.*—The work in connection with this disease was carried out on the lines instituted by Major Grattan, R.A.M.C., last year, viz., palpation of the glands of the neck, and in those cases in which any enlargement occurred, the puncture of such glands and the search for trypanosomes in the gland juice; also the examination of the peripheral blood for trypanosomes, and, in advanced cases, of the cerebro-spinal fluid obtained by lumbar puncture. I have examined the following natives:—

West African Regiment.—All recruits and men not previously examined by Major Grattan, also as many camp followers as could be induced to submit to examination. One hundred and fifty-seven men were examined. Gland puncture was performed on seven. Only one case of trypanosomiasis was discovered. This case will be mentioned again.

Sierra Leone Royal Garrison Artillery.—Ninety-one men examined.

Gland puncture was performed on six. No cases of trypanosomiasis were found.

Inmates of the Kissi Lunatic Asylum and Home for Incurables.—One hundred and forty cases examined. Gland puncture in seven cases. Two cases of trypanosomiasis were found. All these were old cases. No fresh cases were found, and this was not surprising, as only twenty new inmates had been admitted since the previous thorough examination had been made.

The Colonial Hospital, Freetown.—Owing to the kindness of the Principal Medical Officer of the Colony, and the staff of this hospital, I was allowed the run of the out-patients and of the wards, and a sharp look-out was kept for any cases having enlarged glands in the neck. Several fresh cases of trypanosomiasis were discovered.

Natives in the Protectorate.—During my trip to Taiana, and also at other times when in the Protectorate, I examined all the natives I could get for enlargement of cervical glands.

The following is an abstract of all the examinations made :—

Number of cases examined for enlargement of cervical glands	605
Number of cases in which gland puncture was performed	40
Number of cases in which trypanosomes were found in gland juice ..	9
Number of times in which lumbar puncture was done and trypanosomes found in cerebro-spinal fluid	4
Number of times the peripheral blood was examined for trypanosomes ..	40

Previous Cases of Sleeping Sickness.—The following is a short account of the subsequent history of the cases of trypanosomiasis found by Major Grattan during 1905. Two of the three cases occurring amongst soldiers of the West African Regiment died, one of them, James Goba, of pneumonia, and the other, Makan Kamara, of sleeping sickness, complicated with persistent diarrhoea. Both these men were treated with atoxyl, starting with $\frac{1}{2}$ gr. hypodermically twice a week, and eventually reaching $\frac{3}{4}$ gr. every second day. The third case, No. 2783, Momodu, was under treatment by atoxyl for five months. He had no symptoms originally, and developed none during the period he was under treatment. He subsequently insisted on going to his home. I have only been able to trace some of the cases occurring amongst civilians. One case, "Jimmie," was in the Colonial Hospital with pneumonia, from which, however, he recovered. Active trypanosomes were present in his gland juice. He has since left Freetown. Thomas Coker, another case, came regularly to see me at the Colonial Hospital, and was admitted for observation. He was put on atoxyl, but developed no symptoms, and finally insisted on going home. The two cases at the Kissi Asylum and Home for Incurables are still alive, though symptoms of sleeping sickness are developing slowly.

Fresh Cases of Sleeping Sickness.—(1) No. 2869 Private Momodu Kata, a recruit in the West African Regiment. I discovered active trypano-

somes in the cervical gland juice on October 4th, 1906. He is a fine-looking man, the glands in his neck are well marked, and he has a peculiar thickened and œdematous condition of his skin—otherwise there are no symptoms at all. He has been under constant observation and no alteration in his condition has been noticed. He comes from the Maninga country, in French territory. (2) A child named Williams, also admitted to the Colonial Hospital: an advanced case of sleeping sickness, from which she died in a few days. She had come from the Congo with her parents, who are reported to have both died from the same disease. (3) Max Thomas, a boy sent to me by Dr. Bowers from Kissi. A well-developed case of sleeping sickness, which proved fatal to him in a short time. He had a history of having come with his people from the Congo. (4) A Mendi woman named "Shata"; she came into the Colonial Hospital in an advanced state of sleeping sickness, from which she died in eight days. An autopsy was made, the organs showing the usual characters of the disease. This woman's husband stated that she came from Taiama, in the Protectorate.

On this account I thought it right to visit this district, and try to find more cases of the disease, and also to see if there were any infected tsetses in the neighbourhood. This was accordingly done, but the results were disappointing. I found specimens of the *Glossina palpalis*, it is true, but on dissection no trypanosomes could be discovered in them. Further, I palpated the glands of as many natives as I could persuade to submit to examination. But they were entirely healthy working people. I was unable to see any sick people. The natives are so superstitious and timid that they hide away any sick person. It was only after several palavers and much persuasion that I could get any people at all, even healthy ones, to examine.

Prevalence and Distribution of the Disease in the Colony.—In attempting to discover this, I had to be guided by the following known data: (1) It is now an established fact that cases do occur in the Colony and Protectorate of Sierra Leone. (2) We know that in Freetown a certain number of cases are imported from down the Coast, the Congo and elsewhere. (3) We also know that cases occur in natives who have never left the Protectorate. (4) We do not know, however, how prevalent the disease is, because the natives, being so timorous and prejudiced, adopt the attitude of hiding their sick relatives away. For this reason, the search for cases in the small areas that have been tried has more or less proved a failure. To hope for much success in this respect, one would have to sit down for several weeks in a suspected neighbourhood and overcome the timidity of the native, and thoroughly obtain his confidence. To search the whole Protectorate in this way would take, I venture to say, the whole time of one man for many months.

This method of investigation was clearly beyond my reach, and so

I turned my attention to the alternative method—the search for the causal agent, the *G. palpalis*.

The Tsetse-fly.—The first thing to do was to discover the distribution of the *G. palpalis* in the Colony and Protectorate. I had made a tour of a month's duration with the Officer Commanding West African Regiment and the Commandant Royal Engineers in the north-west



Spot Map, showing distribution of *G. palpalis* as known at present.
x indicates presence of *G. palpalis*.

corner of the Protectorate. All along the route I was able to catch tsetse-flies, and these I sent to the British Museum for identification. They all proved to be *G. palpalis*. It was unfortunate that I was unable to dissect flies on this trip, to see if they were infected, but we were on duty of a military character, and were travelling as fast as possible. For this reason, too, I was not able to stop very long in any

one place to hunt out any possible cases of sleeping sickness. However, we know the distribution of the *G. palpalis* up to a certain point, *vide* map. It exists in the low-lying ground in the neighbourhood of Freetown, and also along the Lokkoh Creek, and the courses of the great waterways, viz., the Great and Little Skarcies, the Rokell, the Mobole, and the Tabe Rivers. It was a practical impossibility for me to make a complete tour of the Protectorate in search of flies, as it would have taken several months and have been very expensive. I accordingly approached the acting Principal Medical Officer of the Colony on the subject, with a view to obtaining his assistance in the matter. I gave him sufficient specimens of the *G. palpalis* to send to all his medical officers and the district commissioners in the Protectorate. They are to try and collect tsetse-flies both at their stations and also when on patrol in the bush. The Officer Commanding West African Frontier Force has very kindly consented to do the same, and specimens have been sent to all his subordinates in the out-stations. In this way we shall be able to collect tsetse-flies from every part and corner of the Protectorate. I am easily able to identify the *G. palpalis* and several other species of Glossina, and my successor here can easily learn to do the same from Austen's "Monograph on Tsetse-flies," which is in the Laboratory. It will therefore be unnecessary to send flies home for identification, and a great saving of time is thereby gained.

Dissection of Tsetse-flies.—As I am always, or nearly always, able to obtain fresh specimens of *G. palpalis* from the neighbourhood of Aberdeen and the Lighthouse, I tried to ascertain if any trypanosomes could be found in any of them on dissection. Professor Koch, in his article, "Preliminary Statement on a Voyage of Investigation in East Africa," which appeared in the *Journal of Tropical Medicine* in February, 1906, stated that the best method to employ was to pull out the proboscis of the fly, and examine the droplet of clear fluid at its base for active trypanosomes. I used this method and also examined the contents of the stomach. All my results were negative. I also examined eight fresh flies (*G. palpalis*) at a town named Taiama, which is nearly in the centre of the Protectorate. The results of the dissections were also negative; this, however, does not go to prove anything, as the number of flies examined, forty in all, was too small. It must, however, be understood, that though tsetses are plentiful in certain localities, it is not very easy to get fresh specimens, as natives are lazy in collecting them, even at a remuneration of three pence per live fly.

Health of Cattle and Horses.—While on the subject of the tsetse-fly, it is right to say a few words on this matter. Generally speaking, the cattle are very healthy. This, however, is not the case with horses in Freetown, though I am informed by officers who have spent much time in the bush that there are a certain number of healthy horses in the Protectorate. These appear to have been imported from French

country, but I have no personal knowledge of this. In the town I have examined the blood of several horses that were suffering from a wasting disease, but have never been able to find trypanosomes in their blood. Moreover, I have never been able to find any *G. morsitans*, though it must be admitted that Major Grattan did find a few specimens of this species.

(e) *Blackwater Fever*.—This is the important disease of the Colony, and is the one that occupies the mind of the European residents more than any other. Its etiology is one of the scientific questions of the hour. Are we dealing with a definite and separate disease, or with some form or manifestation of malaria? In a series of ten cases of blackwater, in eight of which I examined the peripheral blood, I found the malarial parasite in five of them. In each of these instances I had early access to the patient, but in the remaining three cases I did not get the blood for examination until the disease was well advanced. This was unfortunate, as I think that the earlier in the disease that one can examine the blood the more likelihood there is of finding the malarial parasite. In the five cases in which the malarial parasite was found, I was much struck with the fact that in all of them the characters of the plasmodium were identical. All the films were stained by Leishman's method. In each instance the parasite took the form of the minute rings of malignant tertian, but with a certain difference. In the usual ring form of the malignant tertian, met with out here, the chromatin dot was situated in or on the thin line of the blue-stained protoplasm.

In the blood of each of the blackwater cases a great number of the rings, though it must be admitted not all of them, had the following peculiarity, the dot of chromatin was not situated in or on the line of protoplasm, but definitely inside it.

This seemed to me to point to the fact that blackwater fever was due to a definite and separate species of malarial parasite, and though the number of cases is too small to permit of a dogmatic statement, yet I must admit that I am inclined to this view of the etiology of the disease. In support of the theory of the malarial origin of blackwater I would like to mention the following interesting points that occurred in the course of a case suffering from this disease in Tower Hill Hospital: The patient, a European corporal in the Royal Garrison Artillery, was admitted with blackwater on November 2nd, 1906. He was placed on ext. *cassiaë bereana* liq., 40 minims every two hours, and for several days progressed favourably, his urine gradually clearing up until the 10th November, when it was quite free from hæmoglobin. During this period he had a constant slight rise of temperature. On November 15th, however, the temperature rose to 104·4° F., and cerebral symptoms with coma developed. As his blood contained numerous malarial parasites, he was given quinine, 3 gr. hypodermically, together with $\frac{1}{10}$ gr. of strychnine. Improvement took place almost immediately, consciousness

being recovered, and the temperature dropping to 101° F. During the next few days he had several attacks, but the hypodermics of quinine were persisted in, and on November 19th his temperature dropped to normal, and stayed there. The patient was invalided home on November 30th.

(f) *Enteric Fever*.—There have been no cases amongst the troops in the Command. The absence of enteric fever is one of the most noteworthy features in the medical history of the Colony. Why it should be absent in a spot which apparently has ideal conditions for the growth and development of the bacillus is at present a pure mystery. I was first of all inclined to take the view, that the reason lay in the character of the drinking water, which is remarkably pure, both chemically and bacteriologically. I am convinced now, however, that this is not the only factor, and indeed, not the chief one. My reasons are as follows :—

Freetown itself has now a very pure water supply, but this was not completed until last year, although part of the water supply has been fairly good for some years. Previous to this good supply being laid on, water for drinking purpose was obtained from wells. Now, Freetown is one mass of cess-pits, practically every house having its own pit. During the torrential rains in the wet season these cess-pits freely overflow, and practically the whole soil of the town gets saturated with sewage. The condition of affairs was then, that the inhabitants lived and ate their food off sewage-polluted soil, and drank sewage-polluted water, this too, in a moist, tropical climate, and amongst a people debilitated with malaria and syphilis. In spite of these favourable conditions, enteric fever was and is practically non-existent. This information I have on the authority of the acting Principal Medical Officer of the Colony. He further states "the agglutination test has been tried many times, but as far as I know without results."

To my mind, these facts point to the presence of some factor other than the possession of a pure water supply, in the non-existence of enteric fever. Whether this factor lies in the hematite soil, or whether it is that anti-toxins are developed in the blood of the inhabitants in infancy, I cannot say; but I make no apology for stating the above interesting points in connection with a disease the importance of which cannot be over-estimated.

SANITARY REPORT BY STATIONS.

Tower Hill.—This is the headquarter station, and is situated some three-quarters of a mile from Freetown at an elevation of about 400 feet.

The Barracks.—These are two-storeyed buildings. They face north and south, but are not built in *echelon*, being in one straight line with no spaces between them. They are of an old pattern, and the rooms are dark and gloomy. The building for the Sergeants' Mess and Staff-Sergeants' quarters, and also the block of married quarters, are new and of an excellent pattern.

Officers' Mess Block.—This is an old two-storeyed building. The ground floor is taken up with various offices, the first and second floors with mess-rooms, headquarter offices and officers' quarters. It is a very old building, and many of the quarters are not at all desirable owing to their age and extreme gloominess. The officers' quarters, in a building called the "band hut," are light and airy.

Disposal of Excreta.—This is on the dry-earth system. The latrine buckets are taken away at night, and the contents are emptied into the sea, when they are carried away into the Atlantic by the strong currents. This system works very well.

Disposal of Refuse.—This is done by contract, and the most constant supervision is necessary to ensure efficiency. Old bottles and tins have been continually found in the vicinity of barracks, and during the rainy months they remain half full of water, forming excellent breeding places for mosquitoes. The difficulties here are: (1) That bottles and tins are of no commercial value, and so there is no inducement to take them away; (2) that the grass and vegetation grow so quickly that bottles and tins may be easily thrown away without being noticed. These remarks apply not only to Tower Hill, but also to the other stations in the Command. It was a dangerous nuisance, as I am sure it tended to increase the breeding of mosquitoes. By constant supervision of the contractors, however, and the continual clearing of vegetation by fatigue parties, this nuisance has been very considerably reduced.

Houses in the Town.—Owing to lack of accommodation at Tower Hill, British N.C.O.'s have to occupy houses in the town. One of these I condemned on sanitary grounds as unfit for occupation, and accordingly another house in the town was found. Both these houses are in a good sanitary state, and I have nothing to urge against them on this ground, but I think their situation is objectionable. I consider it wrong for British N.C.O.'s to live in the town at all, as they are surrounded by insanitary native dwellings, and are in the midst of a native population infected with malaria and ankylostomes. For these reasons I have strongly recommended that a suitable site be chosen at Tower Hill, and quarters built on it for the accommodation of these N.C.O.'s.

Sanitary Improvements during the Year.—The surface drainage has been considerably improved, bath and ablution accommodation increased, and many minor improvements in connection with cook-houses and latrines made. A new block of officers' quarters is in course of construction, also a new canteen and recreation room. The stream from which the water supply is derived has been efficiently protected by enclosing it with wire fencing. Also, I am glad to say, mosquito nets are being provided for non-European troops. This is a step in the right direction.

Signal Hill, Murray Town, King Tom, Falconbridge, Farren Point.—At these places batteries for the coast defence are situated. Minor sanitary

recommendations have been made in respect to surface drainage, cook-houses, &c. These have either been done or are in process of being carried out.

Mount Aureol and Kortright.—These stations are occupied by the 1st Battalion West India Regiment. The former is the headquarters, and the latter accommodates one company. Mount Aureol is at an elevation of 800 feet, and Kortright some 200 feet higher. They are both over a mile away from Freetown and form an ideal situation for troops.

Barracks.—These consist of wooden huts, which, speaking generally, face north and south. For the most part they are of good pattern, being light and well ventilated. The general sanitary condition is good and the drainage efficient.

Water Supply.—This at present comes from the same stream that supplies Tower Hill, but at a spot some 300 yards above that supply. The water is laid on by pipes to Mount Aureol, but has to be carried by hand to Kortright. As these three stations derive their water supply from the same source, there is usually a shortage of water in the middle of the dry season, hence a new water supply to Aureol and Kortright is in course of construction. This supply will be brought by pipes from a stream at Gloucester Saddle, a distance of nearly three miles. The catchment area of this supply is an extremely good one. There is no human habitation or native hut in the vicinity, neither is there any cultivated land. As this area is within the danger zone of the Kortright rifle range, it is not frequented by natives, and so the risk of pollution is practically *nil*. Other sanitary improvements of a minor character have been made in connection with drainage, cook-houses, ablution rooms and latrines. The night-soil is buried about a mile away from barracks, as it is too far to take it to the sea. Formerly it was buried in one large pit, but I have recommended the use of shallow trenches instead, and this plan has been adopted.

New Buildings.—The following have been erected: Commanding Officer's quarters at Kortright, mess offices and billiard hut at Aureol, and several new buildings for the men. Annexes have been added to the wards of the hospital at Aureol, and an officers' ward is in course of construction, as also are new officers' quarters.

Wilberforce.—This station is occupied by the West African Regiment. The barracks are laid out on a plateau some 800 feet high, and about three miles from Freetown. They consist of mud huts running east and west. The sanitary condition is satisfactory. The buildings for the officers' quarters and mess and also those for the European non-commissioned officers are some 300 yards from the lines, and at a slightly higher elevation. They are of an excellent pattern and are built facing east and west.

Water Supply.—This is brought in pipes from a stream at Regent, some three miles south of the station, and is pure and plentiful.

Disposal of Excreta.—Same as at other stations.

Sanitary Improvements.—Several minor ones have been made. Repairs and improvements have been made to the huts of the hospital, and some new huts have been built, viz., a ward for Europeans, a hut for operating and one for infectious cases.

A new Commanding Officer's quarter has been built.

STATIONS IN THE PROTECTORATE.

Port Lokkoh.—In this station there is at present one company of the West African Regiment. A fresh site has been obtained for barracks and new huts have been built for the men, and have been in occupation since March, 1906. These huts are very satisfactory. The ground on which they are built is somewhat swampy during the rains; but this defect has now been remedied by efficient drainage. Sites have been chosen and the plans are out for a new hospital, guard-room, cells and company offices.

The building at present in use as an hospital is quite unsuitable for the purpose. As it is intended to station one more company of the West African Regiment at Port Lokkoh, some land adjoining the present site of barracks has been obtained, and more huts will be built for the new company.

Water Supply.—This is from a spring and is pure water. There is, however, a shortage during the dry season. To remedy this I have recommended that the present natural basin for catching the water be enlarged, concreted, and a dam built; also that it be efficiently protected.

Mabanta.—In this station there is quartered one company of the West African Regiment. The general sanitary condition is satisfactory. Minor sanitary defects were noticed in connection with ventilation of cells, lighting of prisoners' room, and destruction of woodwork in latrines by white ants; all these defects have since been remedied.

Water Supply.—This is from a spring and is good. I have recommended that the dipping place be concreted and efficiently protected.

Batakanu.—This station has been occupied since April, 1906, by that company, West African Regiment, which was previously quartered at Magbele. The latter station was abandoned in November, 1905. The sanitary condition is satisfactory. No structural improvements have been undertaken, as this station will be vacated early next year, when the troops occupying it will go to the new lines at Port Lokkoh.

Small-pox.—This disease, which is endemic in the Protectorate, has been very prevalent this year in the Karina district. A few cases occurred amongst the troops at the out-stations. The usual precautions of vaccination, isolation, &c., were taken.

Reprint.

THE PRESENT STATUS OF MILITARY MEDICAL ARRANGEMENTS IN CANADA.¹

BY LIEUTENANT-COLONEL J. T. FOTHERINGHAM.

Canadian Army Medical Service.

Paper read before Meeting of British Medical Association, Toronto, August, 1906.

It may appear strange to you that the Section of Army, Navy and Ambulance is not organised for this meeting. My brief paper is an attempt to show that the subjects germane to the Section named are at least not entirely unthought of in this country, and the relative neglect of what is in all other civilised countries so important a special branch of medical science may appear more reasonable to you after hearing the figures which I briefly bring before you.

Canada has a population which, while martial enough in instincts, both in her French and in her English-speaking districts, is almost totally unmilitary. It has not been always so, as witness the struggles of the latter half of the eighteenth century, and the years 1812-15. But our population has been, and is still, so sparse, and so inadequate to the natural advantages and industrial possibilities of the country, that our time has been perforce taken up, to the practical exclusion of other topics, with the struggle with Nature in the mines, the forests, the fisheries, and the fields, our four great primary sources of livelihood; and self-preservation being the primordial instinct of nations as well as of individuals, has shown itself, paradoxical as it may seem, in attention to these primordial matters, to the neglect of those measures of self-protection which older civilisations are compelled to adopt. The main contributing cause has been the ever-present feeling that the Mother Country stands ready to protect us. The rapidly rising tide of national self-consciousness and responsibility, to say nothing of the considerations of self-respect, will, in the near future, change all this. The tone of the Press is changing. The undertaking of the charge of the fortresses at Halifax and Esquimalt is a beginning in the right direction. And with a population of six million, and an annual income of about eighty million dollars (\$80,000,000), an annual military expenditure of about five million dollars (\$5,000,000) is not on the whole uncreditable to a community placed by Providence in a portion of the world so far removed from "War's Alarums." Nothing short of the compulsion of circumstances, such as a serious National or Imperial crisis, is likely to divert the energies of the people of Canada from the industrial development of the

¹ Reprinted from the *British Medical Journal* of October 27th, 1906.

country into military channels. The enforced adoption of separate national existence by the United States a century ago is largely responsible for the enormous development on all sides of a nation's life over there, and until we in Canada do the same thing, but not, *not*, in Heaven's name, by the same method, or with the same result of separation from the Mother, we shall not come to our own as a nation, nor play our part in the partnership of nations known as the British Empire. Pardon, if you please, this digression, and let me return to the beaten track, expressing the confidence that there is stirring in the cosmic consciousness of Canada, the hope that as history undergoes her evolution it may be granted to us to hand on the torch, and to be the go-between for the Motherland and her once-estranged daughter to the south of us, to bring her back, if not into full family relationship, at least into full sympathy and alliance with the group of nations which within this century will be found full-grown, but still owing heartfelt and unreserved allegiance to a common head, the Sovereign of the Empire.

The military forces of Canada are Militia Forces only. The Militia is divided into three classes, the Permanent Force, the Active Militia, and the Reserve Militia. The latter body is unorganised and untrained, and really means the able-bodied males of the country, of military age, and subject to service only if a *levée en masse* were ordered in time of great danger. The Permanent Force is enlisted for three years' continuous service only within the confines of Canada, and so corresponds to the Standing Army of other countries. It embraces all arms of the Service, with details of all the Administrative and Corps Troops, and exists mainly for three purposes: (1) To act as Instructional Troops; (2) to aid the civil power in case of need; (3) to care for the fortifications and military stores of the country. This establishment numbers, all told, about five thousand (5,000) officers and men of all arms, but they are constantly much under strength, the industrial activities of civil life being so many and so tempting that recruiting is very difficult in times of peace.

The Active Militia, including the Corps Reserves, composed of those who have had three or more annual trainings, the organisation of which has been attempted recently, is a force nominally of about 50,000 men. But only about 44,000 are on the establishment, and only about 40,000 have been trained this year. The higher commands, from the Headquarters Staff down through the divisional and district commands to brigades and units, has come of late years to be pretty well organised, the main trouble hitherto having been that the Militia Act in force until 1905 was framed to meet the needs of the country while it was still occupied by the Imperial Forces, from which staffs of all kinds were expected to be provided.

Under the present Act and the Establishment of 1905-6, the following branches of the Service exist in both Permanent Corps and Active Militia: Cavalry, Artillery, Engineers, Infantry, Army Service Corps,

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and Medical Corps. There are also the Ordnance Store Corps and the Pay Department in the Permanent Staff, and in the Active Militia the Corps of Guides (Intelligence Officers) and the Signalling Corps.

Coming now more particularly to the Army Medical Corps, the establishment is about 1,500 of all ranks, including both permanent detachments and the units of the Active Militia. It will be a matter of interest to some of you at least to know that we retain as one of the two main branches of the Service the good old regimental medical officer, wearing the uniform of his regiment, a member of his regiment and its mess, with substantive rank, attained by length of service according to regulations, and not eligible for staff or other than regimental duty. The system is one which in a Militia Force, organised upon county lines, is far too useful to be given up. Each year's experience in annual training as Principal Medical Officer of the district confirms me more strongly in this view.

The other branch of the Militia Medical Service is the Army Medical Corps, with an establishment, as already stated, of about 1,500 of all ranks. Eighteen field ambulances are authorised, and sixteen have been organised in the leading centres from Halifax to Winnipeg. The commissioned establishment is :—

Lieutenant-Colonels	..	..	..	..	..	12
Majors	..	..	..	..	..	25
Captains	..	..	..	..	..	25
Lieutenants	..	..	..	..	..	25

The honorary Colonel of the Corps is the Hon. the Minister of Militia, Sir Frederick Borden, M.D.

As supernumeraries we have :—

Dental Surgeons (Lieutenant)	..	..	..	..	18
Nursing Sisters	..	..	..	..	25

There is also to each unit one Quartermaster, not a medical man, with honorary rank of Captain.

The old distinction between bearer companies and field hospitals was done away with a year ago, and the unit of the Army Medical Corps is now the field ambulance, with total establishment for annual training of ninety, eight of whom, including the Quartermaster, are commissioned officers. This unit is organised in three sections: the Bearer Section (the old Bearer Company), the Tent Section (the old Field Hospital), and the Transport Section. Officers of the Royal Army Medical Corps will be interested, if not envious as well, to learn that our transport is our own, and not, as is still the rule of the War Office, obtained from and manned by the Army Service Corps.

Into the details of our equipment I shall not enter, as not being of any special interest to this Section. In general the technical equipment is identical with that of the Royal Army Medical Corps, and obtained from the same makers. Our tents are different. The bell-tents are of khaki

canvas, much darker and more comfortable in the sunny weather, and better ventilated. Our ward tents are smaller, and we think more convenient than the regulation marquee, besides being much better ventilated by wide-meshed netting in the inner roof along the ridge-pole. The low iron beds with ample bedding, with tarpaulin flooring, and bright acetylene gaslight from an excellent portable apparatus, combine to make these wards remarkably comfortable. The Service is a popular one, the rank and file usually easily recruited on account of the interest that the public in general take in all "first aid" matters. The training of the men in "first aid" to cases of fracture, hæmorrhage, and conditions of suspended consciousness, is very good so far as can be expected in the short time at our disposal—twelve days in camp—though the zeal of all ranks induces at least as much extra training at Headquarters every year as they get in camp. The officers are, as a rule, well selected, the brightest and ablest of the younger practitioners being in all the centres very willing to accept commissions if they can at all afford it. It is not undue self-praise to say that the Army Medical Corps on its organisation in May, 1890, at once stepped into favour, and has maintained a grade of efficiency which, according to recent Annual Militia Reports, is rivalled by only one other branch of the Service in Canada, the Army Service Corps, and we are invariably treated by other arms of the Service with consideration and goodwill. For the further credit of our profession I may add that no other class contributes in proportion to its numbers in civil life so many enthusiastic and capable officers to other branches of the Service—Artillery, Cavalry and Infantry, all have combatant officers doing excellent work, who in civil life are busy and public-spirited medical men.

The work of the Corps has of course been so far confined to the care of the troops in camp for annual training. This is, of course, practically active service, but under specially easy and favourable conditions. The real problem of camp sanitation and control of infectious diseases can scarcely be said to come before us at all in so short a time as a fortnight in a standing camp. Still, there are invariably a few cases such as measles, diphtheria, or small-pox, brought to camp in incubation, and it speaks well for the promptness and discipline of both the regimental and the Corps medical officers that in the two years during which I have had the medical charge of the camp at Niagara of 5,000 men or more, not a case has arisen of any contagious disease contracted in camp.

The sick parades of the units are held at 6 a.m. By 7 a.m. the field ambulance wagons have made their rounds, and by 8 a.m. at latest, the day's sick are comfortably seen to in the tent divisions of the field ambulance; the camp sick reports for the day are dealt with, and orders for stamping out any reported contagion are issued from the Principal Medical Officer's office, and acted upon not later than 9 a.m. And the effectiveness of this supervision is shown in the fact above stated that not a case has yet arisen in the camp in two years from contagion contracted

at camp. Each field ambulance is provided with a steam disinfecting tank, though we have found that the boiling of a few ounces of formalin in a tightly closed bell-tent, in which infected clothing, &c., have been hung up, is simpler, less troublesome, and quite effective.

As regards qualifications, the requirements for regimental medical officers are slightly less than for Army Medical Corps officers. After one year as Lieutenant, the officer, if qualified, becomes a Captain. Four years as a Captain entitles him to a Majority, on further examination, unless the full Army Medical Corps examination has been taken at the outset. Ten years as a Major secures the rank of Lieutenant-Colonel.

The initial qualifying examination includes: (a) Regimental Duties and Discipline as per Regulations and Orders, 1904, and King's Regulations; (b) Infantry Drill, Part 1; (c) Regulations for Army Medical Services, certain specified portions; (d) Manual for Royal Army Medical Corps.

The Army Medical Corps officers may qualify by one of the two following methods: (a) Those who have served with an army in the field as medical officers may be considered eligible; (b) those who hold certificates of proficiency from one of the following training schools: (1) Royal Army Medical Corps Depot, Aldershot, England; (2) Volunteer Ambulance School of Instruction, London, England; (3) Canadian Army Medical Corps courses.

Previous to obtaining such a certificate the candidate must qualify in Infantry Training, Parts 1 and 2, at one of the schools of infantry, and subsequently he must obtain a certificate of equitation at one of the schools of cavalry. Candidates must be also qualified practitioners according to law, and may not be over 45 years of age.

Speaking for my own district, No. 2, I can say that out of more than thirty Army Medical Corps officers not more than three or four have still to qualify, and the same proportion obtains among the regimental medical officers. This is not the time nor the place for detailing the syllabus of training and instruction. Suffice it to say that it covers the essentials and makes it possible for the young officer, by subsequent experience and attention to duty, to become thoroughly efficient.

In closing, I must not omit to direct attention to the great value of the services rendered by the dental surgeons, one of whom is attached to each field ambulance for the annual training, and who are daily called upon to treat the commoner dental affections elicited by sleeping on the ground, exposure, or change of food.



Reviews.

ON THE SANITATION OF ARMIES ON ACTIVE SERVICE IN THE FIELD.
By T. F. Dewar, M.D., D.Sc., Surgeon-Major, Imperial Yeomanry.
Second Edition, 1907. Arbroath: J. Buncle, 1907.

This is a brochure of eighty pages, based upon the author's experience, partly in the combatant ranks and partly in the Medical Service, during the South African War. The diseases prevalent in campaigns are treated of, first in a general way as to their occurrence; and then particularly, as to their causation and prevention. Chapter IV. deals with sanitary preparations for field service, emphasising the need for a special sanitary staff, and for the special instruction of both officers and men of the combatant ranks in sanitation. In Chapter V. some "sanitary considerations affecting the individual" are put forward; more active service in peace time is recommended. "It is a grievous feature of our military life at home in peace, that it is an individual life, to a large extent desultory and without motive. Apart from drills and parades, garrison duties and fatigues, the soldier's life is one of leisure, . . . with the average infantryman (and these comprise the great majority) the life is full of ennui, an ill preparation for active service." There is some truth in this: the difficulty of any radical alteration is recognised, but it is suggested that "attractive voluntary tasks" in workshops, schools, &c., might be provided; also the "heartly encouragement of all active out-door amusements and games of agility and strength. Thus might our troops emulate the Roman soldiers, 'who were trained so severely in peace that war was a relief.'" It can, however, hardly be said that athletic games and exercises are neglected in our Army; though we do not at present approach to the severity of the Roman training; nor, it may be added, to that practised in some Continental armies.

Surgeon-Major Dewar is alive to the importance of training the men in self-restraint as regards drinking "indiscriminately and often immoderately"—not alcoholic drink, but fluid of any kind. He states his own experience that "by resisting the desire to drink on every opportunity the self-denial soon becomes easy; while those who yield to it merely increase their thirst and aggravate the privation." Sound advice such as this cannot be too widely disseminated. The war ration in South Africa is considered to have been satisfactory, leaving "nothing essential to be desired." It is suggested that the tea should be increased to $\frac{1}{2}$ ounce and that 2 ounces of chocolate should be issued daily. "It is a food of the highest order, and appreciated by troops. It keeps well, is easily conveyed and can be used alternatively as a food or as a beverage." Tobacco (2 to 3 ounces per week) is also recommended; while the spirit ration is condemned.

The importance of cleanliness of the person and of the underclothing is insisted on, especially in the case of wounded men. It is difficult of attainment and sometimes impossible. The Japanese instruction to put on clean underclothing when an engagement is impending "is only

under exceptional circumstances feasible." But if its importance in regard to their own quick recovery from wounds be explained to the troops, they will possibly be keener on maintaining the cleanliness of their persons than they would be from merely æsthetic considerations.

Chapter VI. deals with preventive sanitary measures in the field, in regard to water supply and purification, and the prevention of soil pollution. These subjects are familiar to all, and it is difficult to say much that is new, and true; or that is true, and new. Surgeon-Major Dewar admits that no one method of water purification is invariably the best, but considers that those by heat are the most reliable. Chemical purification is still on its trial. As regards boiling *versus* filtration he puts it thus: "where boiling is difficult filtration is more so; where boiling is easy it is safer and preferable generally."

The methods to be adopted under field service conditions, to prevent extension of disease already present are discussed in Chapter VI. Enteric fever is the disease most to be dreaded. Early diagnosis is recognised as a necessity; every case resembling enteric should be looked on as a genuine case, unless diagnostic methods are available. Men suffering from diarrhœa, "fever," or persistent headache should be encouraged to report sick, and not be urged (as has been too often the case) to "fight it out." The author is fully alive to the importance of such cases being removed as soon as possible from tent life in common with other men, sharing utensils, blankets, &c., and with no sense of the danger of spread of infection. Early isolation is a necessity. Disinfection of infective excreta of all kinds by boiling is recommended as the most satisfactory method of all those that have been proposed.

This pamphlet may be recommended as containing a great deal of information in a small space, the outcome of a study of the subject supported by personal experience in the field; and as being remarkably free from personal "fads." Moreover, there is no padding.

A. M. D.

MIDWIVES' POCKET REGISTER AND CASE BOOK. By Major R. J. Blackham, R.A.M.C. London: Henry Kimpton.

The Register has been prepared to provide practising midwives with a portable substitute for the bulky official Register. It gives the rules of the Central Midwives' Board, regulating the practice of midwives corrected up to date together with annotations by the author. Space is provided for keeping a complete record of the labor and puerperium for 50 cases which, it is estimated, is the average number attended yearly in an ordinary practice. A useful feature is some notes on the care of children, including a simple nursery decalogue which the mother might well commit to memory during the enforced leisure of the latter days of the puerperium.

Current Literature.

The Treatment of Mediterranean Fever by means of Vaccines, with Illustrative Cases.—Fleet-Surgeon P. W. Bassett-Smith, R.N., contributes an article to *The Journal of Hygiene* for January, 1907, on an attempt made to cure Malta fever by means of the injection of dead cultures of the *Micrococcus melitensis*.

This is the newest phase in the development of modern medicine, and a great future is prophesied for it by some of its votaries. Robert Koch started the fashion about 1891, when he introduced his tuberculine. Sixteen years have elapsed since then, but little advance has been made in the cure of tuberculosis by its means. Recently an attempt has been made to revive this method of treatment, but the *renaissance* seems rather of the nature of a stillbirth. However, the way to advance knowledge in medicine is by experiment, and this has been done for Malta fever.

The author introduces his subject by saying that, as medicines and antitoxic sera have proved useless up to the present, "the most successful and rational line of treatment would seem to be the employment of means for increasing and stimulating the 'phagocytes,' rendering them able to combat this influx of toxin-producing germs."

However, the result of the experiment of the injection of dead micrococci seems to be nil in the case of Malta fever, since Bassett-Smith gives the following table:—

Sixty cases, 1905, without vaccines, average duration in Haslar Hospital, sixty-seven days.

Sixty cases, 1906, with vaccine, average duration in Haslar Hospital, seventy-five days.

The Etiology of Dengue Fever.—In the *Philippine Journal of Science, B. Medical Sciences*, vol. ii., No. 2, May, 1907, Ashburn and Craig, of the United States Army Medical Department, give the results of their experimental investigations regarding the etiology of this disease. They summarise their conclusions as follows:—

(1) No organism, either bacterium or protozoon, can be demonstrated in either fresh or stained specimens of dengue blood with the microscope.

(2) The red blood count in dengue is normal.

(3) There occur no characteristic morphological changes in the red or white blood corpuscles in this disease

(4) Dengue is characterised by a well-marked leucopenia, the polymorphonuclear leucocytes being decreased, as a rule, while there is a marked increase in the small lymphocytes.

(5) The intravenous inoculation of unfiltered dengue blood into healthy men is followed by a typical attack of the disease.

(6) The intravenous inoculation of filtered dengue blood into healthy men is followed by a typical attack of the disease.

(7) The cause of the disease is, therefore, probably ultramicroscopic.

(8) Dengue can be transmitted by the mosquito, *Culex fatigans*, Wied., and this is probably the most common method of transmission.

(9) No organism of etiological significance occurred in bouillon or citrated blood cultures.

(10) The period of incubation in experimental dengue averages three days and fourteen hours.

(11) Certain individuals are absolutely immune to dengue, as proven by our experiments.

(12) Dengue is not a contagious disease, but is infectious in the same manner as is yellow fever and malaria.

This important research has added another disease to the list of those whose causal agent is capable of passing through a fine porcelain or diatomaceous filter. The most important of these diseases are foot and mouth disease, pleuro-pneumonia of cattle, yellow fever, rabies, rinderpest, South African horse-sickness and hog cholera. In dengue, as in others of this group of diseases, various microscopic causal organisms have been described from time to time. Thus McLaughlin, in 1886, described an organism of a bacterial nature. In 1903 Graham announced that dengue was due to a protozoon inhabiting the red blood corpuscles and closely resembling the plasmodia of malaria, except for the absence of pigment. In the light of our present knowledge these bodies must cease to have any etiological importance.

E. D. W. G.

Prevention of Yellow Fever in Rio de Janeiro.—The following table, taken from *La Politique Coloniale* of July 13th, 1907, shows the results obtained after prophylactic measures had been introduced for the prevention of yellow fever in Rio de Janeiro.

DEATHS FROM YELLOW FEVER IN RIO DE JANEIRO.

Month	Year								
	1896	1897	1898	1899	1900	1901	1902	1903	1904
January ..	690	38	19	138	57	24	48	184	5
February ..	986	65	113	235	49	55	86	219	7
March ..	1,433	88	310	258	89	83	223	270	9
April ..	557	66	278	101	50	66	218	148	8
May ..	171	36	178	40	21	38	208	44	10
June ..	34	16	82	22	13	22	128	20	4
July ..	24	5	54	17	7	19	85	16	4
August ..	16	2	30	7	6	5	54	12	1
September ..	4	1	14	14	3	11	36	4	2
October ..	19	..	12	11	7	16	39	4	—
November ..	12	4	17	19	7	9	36	3	3
December ..	28	4	30	35	5	10	121	4	—

Note.—Prophylactic measures were commenced in 1903. The Government originally granted a credit of £4,000 to Dr. O. Cruz for hygiene reform; this has since been raised to £68,000 in consequence of the valuable results.

W. G. M.

Statistics of Chief Diseases amongst Troops in the Philippines and the United States Army.—The tables given on p. 319, comparing the incidence of disease amongst the troops in the Philippines with that amongst troops in the United States, are taken from an article in the

UNITED STATES ARMY.
Admission- and Death-Rates per 1,000 of Average Strength, for Years 1898 to 1905, inclusive.
 A.—PHILIPPINE ISLANDS.

	ENTERIC FEVER		TUBERCULOSIS		MALARIAL FEVERS		DIARRHEAL DISEASES		INSANITY		ALCOHOLISM		VENEREAL DISEASES		UNDETERMINED FEVERS	
	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths
1898 ..	68.21	7.58	4.48	.00	429.56	1.72	431.97	1.72	2.07	.34	21.70	.34	106.78	.34	63.04	.00
1899 ..	22.48	3.58	5.54	1.18	705.49	1.23	748.59	6.11	2.97	.00	7.46	.26	120.36	.00	39.92	.00
1900 ..	7.70	1.04	4.71	.99	742.81	1.64	401.37	1.38	2.79	.06	12.41	.20	138.88	.06	30.21	.03
1901 ..	5.58	1.06	5.23	1.19	520.50	.90	439.18	4.89	2.04	.00	21.07	.39	153.60	.08	26.45	.00
1902 ..	6.07	.98	5.04	1.28	438.12	.67	546.68	5.40	2.47	.06	21.18	.40	172.81	.03	18.10	.00
1903 ..	4.16	.76	4.86	.37	458.59	1.34	325.44	2.13	1.05	.00	19.10	.16	175.00	.04	Unknown.	
1904 ..	1.92	.42	5.41	.25	220.65	.25	237.16	1.09	1.75	.00	37.85	.00	297.42	.00	33.34	.00
1905 ..	2.80	.27	5.79	.13	261.55	.63	197.34	.63	1.45	.00	30.18	.27	305.78	.00	35.27	.00

B.—UNITED STATES.																
1898 ..	85.46	8.79	2.58	.34	655.82	2.24	254.29	1.53	1.24	.00	15.95	.13	81.49	.00	—	—
1899 ..	10.85	1.07	4.01	.42	863.36	.11	93.90	.11	1.72	.00	18.35	.46	148.43	.00	—	—
1900 ..	5.75	.43	5.27	.63	166.20	.24	101.30	.19	1.30	.00	22.43	.14	155.39	.05	—	—
1901 ..	9.43	.64	4.79	.64	113.33	.04	126.19	.46	1.28	.00	26.35	.26	149.96	.08	—	—
1902 ..	8.58	.86	3.85	.50	96.29	.11	11.35	.35	1.26	.03	24.44	.28	161.14	.00	—	—
1903 ..	5.82	.28	4.20	.86	60.83	.05	75.50	.30	1.02	.02	26.72	.19	135.84	.07	—	—
1904 ..	5.62	.27	4.55	.68	49.16	.00	77.79	.07	1.71	.00	25.42	.25	163.42	.05	—	—
1905 ..	3.57	.30	4.72	.86	45.29	.02	57.41	.09	1.61	.00	30.22	.26	178.72	.05	—	—

United States Infantry Association Journal by Lieutenant-Colonel E. F. Glenn, 25th U.S. Infantry, entitled "Some things our Infantry require."

For comparative purposes the following table showing the admission and death ratios for corresponding diseases in the British Army during 1905 is given. In the case of enteric fever and malaria the figures are taken for India alone. The British Army compares favourably with the United States Army in regard to the incidence of tuberculosis, alcoholism, venereal and diarrhoeal diseases (dysentery and diarrhoea).

BRITISH ARMY.

Admission- and Death-Rates per 1,000 of Average Strength for the Year 1905—Stations at Home and Abroad.

ENTERIC FEVER*		TUBERCULOSIS		MALARIAL FEVERS*		DIARRHOEAL DISEASES		MENTAL DISEASES		ALCOHOLISM		VENEREAL DISEASES		UNDETERMINED FEVERS	
Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths
16.1	3.00	2.2	.40	111.9	.14	12.7	.16	1.0	.01	1.9	.07	117.7	0.9	22.3	.01

* Amongst troops serving in India only.

W. G. M.

Blood Culture in Enteric Fever.—In the *American Journal of Medical Sciences* for June, 1907, there is a valuable paper by W. Coleman and B. H. Buxton, in which is given an analysis of all results of blood culture in enteric fever hitherto published. The series includes 1,602 cases, 123 of which were their own.

The typhoid bacillus was obtained from the blood of 89 per cent. during the first week of the fever. In one case it was recovered on the second day. In the second week 73 per cent. of the cultures were successful. In the third week, 60 per cent. In the fourth week, 38 per cent. After the fourth week, 26 per cent. only, except when relapses ensued.

The serum reaction was negative in 94 out of 391 instances in which Eberth's bacillus was isolated, *i.e.*, in 24 per cent. Of 55 in which the serum test was negative, 23 were in the first week of the fever, 26 in the second and 6 in the third. The agglutination reaction may be present for two or three days only in mild cases, hence the necessity for repeated observations.

The authors speak of the superiority of the bile method introduced by Conradi, and claim with Busquet, Kayser, and Conradi nearly 100 per cent. of successes by its means. They take 90 cc. of ox bile, 10 cc. of glycerine, and 2 grams of peptone, and sterilise this mixture in flasks, 20 cc. in each. They withdraw 10 cc. of blood from the median basilic vein and distribute about 2½ cc. in each of four flasks. After incubating at 37° C. over night they inoculate litmus-lactose agar plates. They isolated the enteric bacillus from fevers lasting ten, thirteen and fourteen days only. They draw attention to the futility of administering so-called "intestinal antiseptics." Even if these agents could disinfect the alimentary canal, they could not destroy the typhoid bacilli in the blood,

spleen and lymph glands. The bacillus usually disappears from the blood with the advent of a pyrexia. A relapse signifies a re-invasion; for in 90 per cent., cultures are positive. A recrudescence of the fever therefore means a breakdown in the defensive processes of the body. By a study of the agglutination, bactericidal and opsonic curves, plotted out by frequent observations, a fall in the immunising substances in the blood may be detected and the deficiency supplied by the local elaboration of these bodies by means of minute doses of typhoid vaccine injected subcutaneously.

C. BIRT.

Correspondence.

CASE OF ASPIRATION OF THE LIVER, ETC.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—With reference to the very instructive case of "Aspiration of Liver, followed by Air Embolism," published in the April number of the Journal, I think some useful lessons may be learnt from it.

I do not think it is a wise or safe proceeding to explore the liver deeply with a hollow, sharp-pointed needle. This is not at all necessary; a blunt aspirating cannula with a sharp-pointed trochar can be passed through the intercostal space and for about $\frac{1}{2}$ or $\frac{3}{4}$ of an inch into the substance of the liver. The sharp-pointed trochar should then be withdrawn and a blunt one substituted for it. This can be pushed boldly and deeply into the friable liver, without any fear of air entry or injury to blood-vessels. When it has been passed deep enough the trochar should be withdrawn as far as about $\frac{1}{3}$ of an inch from its end and the tap of the cannula turned on before final withdrawal. At the same time the aspirating cannula should be connected with the bottle by turning the tap near the latter, as mentioned in Major Porter's criticism. This was the procedure adopted in four cases recently operated on here. In three pus was found, in two at the first puncture, in the third at the fourth puncture. In the fourth case, six punctures were made with a large-sized aspirating trochar and cannula without result. The liver was deeply and thoroughly explored; the man had not a bad symptom, his temperature was normal in the evening and he is now quite well. If the above simple precautions are taken there is no danger in liver aspiration.

I do not agree with Major Porter "that it was a pity the case was published at all;" the record of a failure is often far more instructive and interesting than that of a success. I only wish that more of us had sufficient moral courage to follow Lieutenant Low's example.

Station Hospital,
Karachi,
July 11th, 1907.

I am, &c.,
M. W. O'KEEFE,
Lieutenant-Colonel, R.A.M.C.

HOUSE-FLIES AND THEIR WAYS AT BENARES.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—I have read with interest Major F. Smith's paper in the last number of the Journal, and with your permission would like to make a few remarks on it.

The important point in the paper is his discovery of the fact that a certain percentage of house-flies will mature in the single excreta of man and his domestic animals, although the *dung becomes dry on the third day*. It seems incredible, however, that the larvæ should mature in three days, seeing that five days is the minimum period; and my own impression is that a certain quantity of the dung is carried down into the earth either by the muscid larvæ themselves or by dung-feeding beetles. In this way sufficient moist food would be available for a day or two longer, and thus enable the larvæ to mature and pupate. Otherwise it seems to me that a very large percentage of the maggots must perish for want of moist food. Major Smith should have ascertained the exact period of the larval stage by keeping them in moist dung under normal conditions as to temperature, and he should also have made a control experiment by imprisoning the larvæ in dry dung.

In his conclusions there is nothing absolutely new, as Howard ("A Contribution to the Study of the Insect Fauna of Human Excrement," *Proceedings of the Washington Academy of Sciences*, vol. ii., pp. 541-604, 1900) conclusively proved that *Musca domestica* breeds in human excreta as well as the dung of some domestic animals (horse chiefly).

I am, &c.,

"ENTOMOLOGIST."

August 7th, 1907.

LOCAL ANALGESIA.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—With reference to Professor Barker's paper on Local Analgesia, published in your issue for August, may I be permitted to state that I have used one all-metal syringe for eucaine injections for about seven months, and have not found any corrosion of parts. My own syringe, which was described in the JOURNAL OF THE ROYAL ARMY MEDICAL CORPS a few months back, still appears in perfect order. Several hundred injections have been given with these two syringes. I fail to see any objection to the use of a little sterilised oil for lubrication of the piston, any more than there is to its use in sterilising antitoxin syringes before injecting antityphoid or other sera.

It would be interesting to know in how many cases Major M. P. Holt has observed a period of considerable neurotic excitement after local

analgesia by eucaine. I have never seen it. My own condition after an injection of about 8 ozs. of Barker's solution, was rather one of depression than of excitement.

Colchester,
August 7th, 1907.

I am, &c.,
F. J. W. PORTER,
Major, R.A.M.C.

THE INCUBATION PERIOD OF BILHARZIA DISEASE.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—In a recent number of the JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, vol. vi., No. 2, 1906, a letter appeared from Dr. F. M. Sandwith, in which he asked for any information regarding the incubation period of Bilharzia disease. I have lately come across some notes which may perhaps be of value in throwing some light on this still uncertain question.

When at Pretoria in 1903, being anxious to obtain some definite information on this subject, I asked the medical officer of the 8th Hussars, Dr. Abercrombie, to make some observations on recently-arrived drafts, and he very kindly supplied me with the following facts, all of which he carefully verified. The regiment was then encamped on the slope of a hill at Daspoort, near Pretoria, below which ran a stream called Skinner's Spruit, in which the men frequently bathed.

Certain rivers in the Pretoria district are responsible for a large number of cases of Bilharzia disease, notably the Apies river, into which this Spruit runs. During the war many cases of this disease occurred among men living in the blockhouses above the river. It is interesting to note that the infection is probably only obtained from running water, such as streams or rivers.

Out of a draft of 206 men of the 8th Hussars, who arrived in the camp from England in November, 1902, six cases occurred between that date and July, 1903, and in a draft of thirty-five men who arrived in December, 1902, there was one case, as shown in the table below :—

Case	Age	Service Years	Date of Arrival in South Africa	Date of reporting sick with Bilharzia ova in the urine	Interval between arrival and reporting sick	Remarks
1	20	1	9.11.02	1.2.03	12 weeks	
2	20	1	9.11.02	17.2.03	14 "	
3	20	1	9.11.02	6.3.03	4 months	
4	21	1	9.11.02	19.3.03	4 "	
5	20	1	9.11.02	20.3.03	4 "	
6	23	3	9.11.02	6.7.03	7 "	Gives a history of four months' duration.
7	16	1	4.12.02	19.6.03	6½ "	Gives a history of three days' duration.

These drafts came out to South Africa direct from England, and on landing were at once moved up to Pretoria. None of them had had any previous foreign service, being with one exception lately recruited, so that no previous infection seemed possible. All these affected men were known to have bathed in, and in some cases to have drunk from, the Spruit below the camp. Of the six cases occurring in the draft of 206 men arriving in November, one reported sick with ova in the urine twelve weeks after arrival in Pretoria, one after fourteen weeks, three after four months, and one after seven months; but in the latter case the man asserted that he had had the disease for about four months before reporting sick. Among these cases, where there is no possible doubt that the disease could only have been contracted during a residence, at the most of seven months, in an infected district, the incubation period was shown, in one case at least, to have been not more than twelve weeks.

I am, &c.,

London,

August 3rd, 1907.

W. W. O. BEVERIDGE,

Major, R.A.M.C.

WANTED, AN EXPLANATION.

TO THE EDITOR OF "THE JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—There are two points in Colonel Forman's paper and in his later letter that are, I think, of some special interest; first, the absence of mosquitoes; and second, his remark that "fish never eliminated mosquitoes anywhere, and never will." It is a curious but interesting fact, well known to occur in all orders of insects, that certain species in their distribution are sometimes prone to be extremely local for no apparent cause. This has been remarked on by Wallace, and discussed in his work, "Darwinism," though, as I am away from a library, I am unable to give the exact reference. To give a familiar example: the swallow-tail butterfly (*Papilio machaon*) is confined in England to the Fen district of Cambridgeshire, though across the Channel and throughout its enormous geographical range, it is a common garden insect, like our cabbage whites. This narrow distribution in England is not due to the local growth of the food plant, which is the wild carrot and fennel, both of common occurrence throughout the Southern counties, at any rate. Again, in the smaller moths (Micro-lepidoptera) it is not unusual to find a species common, or perhaps abundant, on one particular bush, and not a specimen on any other to all appearance precisely similar in the whole district. It is difficult to account for such extreme cases, but so far as my experience goes, it generally occurs in species which are at the geographical limit of their distribution, and where, to maintain even a precarious existence, they have to seize upon every factor of a favourable

nature. These factors may be, and doubtless are, unrecognisable to our senses. I am not contending that the absence of mosquitoes at Sarant Wadi is a sign that they are at the limit of their geographical distribution, the absurdity of which is obvious, but to point out that their absence from a locality where we should expect to find them is not in itself an unique occurrence, and should not greatly surprise us, when we consider that such phenomena are common to all orders of insects—the Diptera included.

Colonel Forman's observation regarding the effect of the presence of fish destroying mosquitoes is quite different to mine, and I am rather surprised he finds himself justified in expressing such a confident opinion regarding their inability to get rid of these insects. My investigations tend very much in an opposite direction, and I may say that Mr. E. Ernest Green, the Government Entomologist, Ceylon, holds the same views as I do, and I judge it of some importance that the advantages of preserving fish for the purpose of keeping down mosquitoes should be widely recognised and acted upon. If Colonel Forman had written "frogs" instead of "fish," I should certainly have agreed with him.

In Colombo there are two fairly extensive lakes, one nearly a mile in length, which lies just at the back of the Military Hospital and Married Soldiers' Quarters, and also, I may remark, at the bottom of my garden belonging to the quarters next the hospital. These buildings are within a hundred yards of the lake. There was in my time a singular absence of mosquitoes, an absence which not only surprised, but I need hardly say, delighted me greatly. No mosquito nets were in use in the hospital, and only for two or three months in the year did I use them myself, neither did the married families require them. I do not say that mosquitoes were entirely absent, but in a locality where one might expect them to swarm, they were remarkably few in number. This was usually attributed to the strong sea breeze, but though this possibly was of some benefit, it was not the prime factor. I frequently searched the lake for mosquito larvæ, and satisfied myself there were few or none, and I attributed their absence to the fish. About the year 1898, a species of dipterous insect, the name of which I forget for the moment, became not only increasingly common, but a positive plague; they swarmed in myriads at dusk and after dark along the margins of the lake and in the dwellings near it, making the lives of the inmates almost unendurable from the swarms attracted by the lights. Sheltered walls in the day-time were black with them; fortunately they had no biting powers. The services of the Government Entomologist were requisitioned, and an exhaustive report issued, the main point of which was that the fish in the lake should be strictly preserved to devour the larvæ of the "lake flies," as they were called. I may mention parenthetically that the mosquitoes did not increase in the same ratio, the reason doubtless being that the surface-feeding larva of the *Culex* was a readier prey for the

remaining fish than were the partially concealed larvæ of the "lake fly."

It would be interesting if one of the Corps now stationed in Colombo would state: first, whether fishing is allowed, and secondly, whether the "lake flies" are still numerous, and to what extent.

It must have been some time previous to this that Mr. Green and I were discussing the mosquito question when strolling through the Botanic Gardens at Peradenia. He remarked to me that he had been searching for larvæ without success in the ornamental waters of the gardens, though they were swarming everywhere else. We both attributed their absence to the small fish of the minnow tribe kept in these fountains, and we then and there set to work to investigate, and though both of us were fairly proficient in this branch of sport we completely failed, and the conclusion was irresistible that the fish were responsible for our empty bag. These small fish, many of the size of whitebait, are of universal distribution in India and Burma, and are found in what would appear to be impossible situations. They abound in the rice fields of Burma, and appear, much to our astonishment, in considerable numbers after heavy rain in what were previously dried-up puddles.

Until an investigator, with more time on his hands than had Colonel Forman, has definitely proved the absence of these small fry in the water round Sarant Wadi and "in the innumerable shallows that no fish, however small, could get into," I am inclined to think the "fish theory" will satisfy local conditions, and no hypothesis, however fascinating, is required.

Ivybridge,

S. Dexon,

August 12th, 1907.

N. MANDERS,

Lieutenant-Colonel, R.A.M.C.

Journal
of the
Royal Army Medical Corps.

Original Communications.

EXPERIMENTS MADE TO DETERMINE THE CONDITIONS UNDER WHICH "SPECIFIC" BACTERIA DERIVED FROM SEWAGE MAY BE PRESENT IN THE AIR OF VENTILATING PIPES, DRAINS, INSPECTION CHAMBERS AND SEWERS.¹

BY MAJOR W. H. HORROCKS.

Royal Army Medical Corps.

Most sanitarians at the present time believe that when sewage is in a putrefactive condition and gas bubbles rising through it are bursting at the surface, bacteria may be carried into the air of drains and sewers. It is also considered possible that when sewage has dried on the surfaces of pipes, bacteria may be separated as dried particles and carried some distance by currents of air passing through the pipes.

The following experiments were designed to ascertain whether there are any scientific facts on which to base these beliefs, and may be arranged in three groups.

GROUP 1.—*Experiments to determine whether Specific Bacteria are ejected into the Air by the bursting of Bubbles at the surface of Sewage.*

In the first series of experiments, sewage obtained from a main sewer in Gibraltar was inoculated with a rich emulsion of *Bacillus*

¹ Reprinted from the *Proceedings of the Royal Society* of May 9th, 1907.

prodigiosus and then poured into a deep glass jar so as to form a layer at the bottom about 2 inches deep. At a height of 4 inches from the surface of the sewage two Petri dishes containing nutrose-agar were fastened, the medium facing upwards, to wire tripods, which were then firmly wedged in the bottom of the dish. A glass cover was then put on the dish and the fluid gently shaken by a horizontal movement, until a layer of bubbles formed on the surface of the sewage. This procedure was followed at intervals for three days, the plates were then taken out and incubated at 22° C. After seven days' incubation no signs of the *B. prodigiosus* appeared. Only one colony composed of cocci derived from the air was seen. This

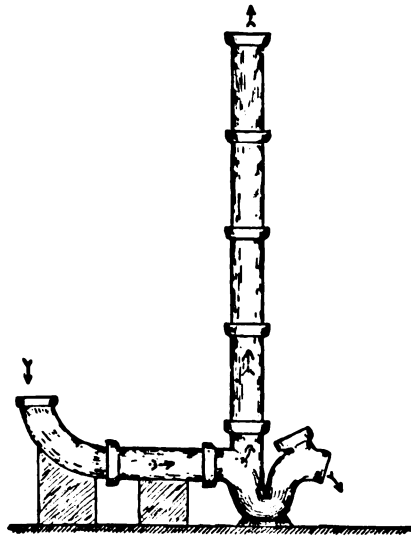


FIG. 1.

experiment was repeated again and again, but invariably with negative results.

The sewage was next inoculated with a rich emulsion of *B. typhosus*, and litmus-lactose-nutrose-agar plates were fastened to the tripods. The dish was shaken as before, the plates were then removed and incubated at 37° C. No signs of *B. typhosus* or *B. coli* were observed after incubation for one week. Old sewage, smelling strongly of sulphuretted hydrogen gas, was then placed in the dish and the experiments were repeated as before. It was thought that gas bubbles would form more readily in old than in fresh sewage; this proved to be the case, but the special organisms added to the sewage never appeared in the plates.

Soapy water from a lavatory basin was then inoculated with *B. prodigiosus* and freely shaken in a glass bottle until it was permeated with bubbles; the fluid was then transferred to the glass dish, the plates fastened to tripods were rapidly placed *in situ*, and the cover put on. Twenty-four hours elapsed before all the bubbles dispersed; the plates were then taken out and incubated as before, but no signs of the *B. prodigiosus* appeared.

In the above experiments there were no air currents circulating above the sewage, and the bacteria could only be ejected by the bursting of bubbles. The results appear to show that independently of air currents, bacteria will not be ejected to a height of 4 inches by the bursting of infected bubbles.

The next series of experiments were made with the apparatus

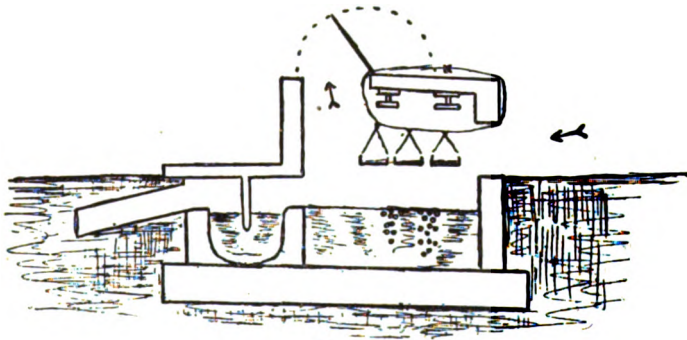


FIG. 2.

shown in fig. 1. Plates of nutrose-agar were suspended by means of wire cages in the vertical pipe, the uppermost plate being 9 feet above the water in the trap. Soapy water, inoculated with an emulsion of *B. prodigiosus*, was shaken up in a glass stoppered bottle until the whole fluid was permeated with bubbles; the contents of the bottle were then poured into the trap until it was filled. Under these conditions currents of air passing up the vertical pipe were able to carry bacteria separated from the fluid by the bursting of bubbles. The plates were removed at the end of two hours and incubated at 22° C. The result was that colonies of *B. prodigiosus* appeared in every plate at the end of seventy-two hours.

The last experiment of this series was made with a catch-pit on the storm-water system of the town. Complaints having been made of foul odours arising from the pit, the hinged cover was thrown back, and it was then seen that bubbles were rising through

the water retained in the pit as a result of fermentation processes going on in the mud at the bottom. The pit contained 180 gallons of surface water at the time. An emulsion of *B. prodigiosus* was poured into the water and plates of nutrose-agar were then suspended as shown in fig. 2. Twenty-four hours later the plates were removed and incubated at 22° C. for two days, when numerous colonies of *B. prodigiosus* were found in all the plates. Control plates of nutrose-agar, exposed to the air outside the pit, did not show any signs of the special organism used in the experiment.

These results show that bubbles rising through stagnant water may eject bacteria, which will be carried away by currents of air passing over the surface of the fluid.

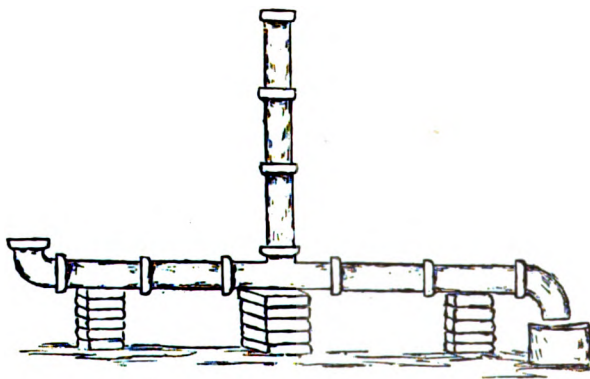


FIG. 3.

GROUP 2.—*Experiments to determine whether Bacteria dried on the surfaces of Pipes are likely to be separated and carried by Currents of Air passing through the System.*

The apparatus shown in fig. 3 was employed. Three 2-ft. lengths of 6-inch piping were laid on the ground and a rich emulsion of *B. prodigiosus* was poured inside each of them. The pipes were then rolled backwards and forwards until the fluid was uniformly diffused over the inner surface of each pipe. Twenty-four hours later the pipes being perfectly dry were fitted together with clay joints so as to form the vertical pipe of fig. 3. Nutrose-agar plates were then suspended in the pipe and sewage was allowed to flow through the horizontal piping at a rate not exceeding 3 feet per second for twenty minutes. The plates were then removed and incubated at 22° C.

At the end of seventy-two hours, all the plates were found studded with colonies of *B. prodigiosus*. The experiment was repeated several times, and on each occasion the same result was obtained. As the sewage passing through the horizontal pipes did not contain *B. prodigiosus*, and control plates exposed to the air were also free from this organism, it is fair to assume that the currents of air produced by the passage of sewage through the horizontal pipes carried up dried particles of *B. prodigiosus* detached from the walls of the vertical pipe.

GROUP 3.—*Experiments to determine whether Specific Bacteria are ejected into the Air of Drains, Sewers, &c., from Sewage flowing under Normal Conditions.*

In the first series of experiments, the trap of a 6-inch disconnecting trap was filled with sewage, and two lengths of 6-inch drain

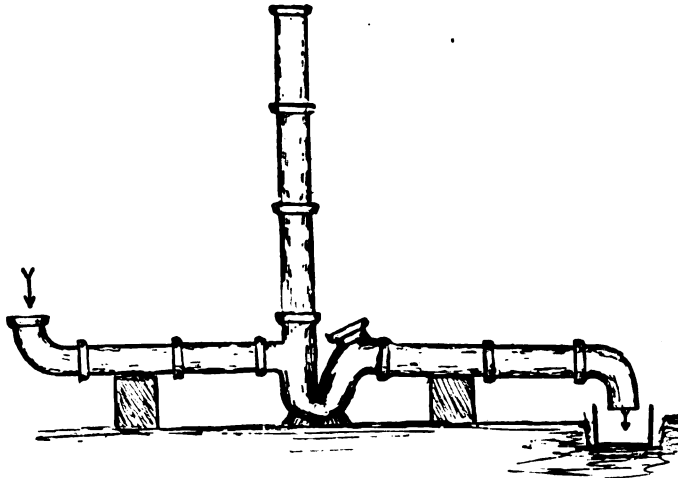


FIG. 4.

piping, having a junction bend turned upwards, fixed at one end, were fitted horizontally into the house side of the trap. Similar lengths of drain piping, but with the junction bend turned downwards, were also fitted to the sewer side of the trap. The vertical portion above the trap was lengthened by the addition of three 2-ft. lengths of 6-inch drain piping. The apparatus is shown in fig. 4.

Three litmus-lactose-nutrose-agar plates were next suspended

with the media facing upwards in the vertical pipe by means of wire cages, the uppermost plate being about 6 feet 9 inches above the sewage in the trap. Three gallons of sewage, taken from a main sewer in Gibraltar, were then inoculated with a rich emulsion of the *B. typhosus*, and poured down the bend on the house side of the trap. The sewage passed through the apparatus at a rate not exceeding 3 feet per second, and was received in a bucket placed under the bend on the sewer side of the trap. The inoculated sewage was passed through the trap in the same manner on two successive days for about half an hour. The plates were then removed and inoculated at 37° C. for twenty-four hours, when numerous transparent blue colonies, resembling those of the *B. typhosus*, were seen in each plate. Several of the colonies were tested with anti-typhoid serum (horse) diluted 1—100, and, agglutination occurring at once, the colonies were plated out on agar slopes. The growths thus obtained were examined as to morphology and Gram staining, and then plated out in the usual media. The following results were obtained :—

Medium.				Result of incubation at 37° C.
Glucose-peptone ..	..	..	..	Acid, no gas.
Lactose-peptone ..	..	..	..	Unchanged.
Maltose-peptone ..	..	..	..	Acid, no gas.
Cane-sugar peptone ..	..	..	..	Unchanged.
Starch-peptone ..	..	..	..	Unchanged.
Neutral-red ..	..	..	..	Unchanged.
Litmus-milk ..	..	..	..	Very faint acidity, no clotting.
Peptone-water ..	..	..	..	No nitroso-indol reaction.
Potato ..	..	..	..	Colourless growth.
Proskauer and Capaldi, No 1 ..	..	..	..	No growth.
Gelatine ..	..	..	..	Thin transparent growth, medium not liquefied.
Nitrate broth ..	..	..	..	Reduced to NO ₂ .
Morphology, &c... ..	..	..	..	Small motile bacillus.
Gram staining ..	..	..	..	Decolorised.

The bacilli were agglutinated by an anti-typhoid horse serum diluted 1—500.

A portion of the agar growth derived from one colony was then emulsified in water and injected subcutaneously into a guinea-pig. As a control, a similar emulsion of the *B. typhosus* used to inoculate sewage was injected into a second guinea-pig of approximately the same weight. At the end of three weeks the sera of both guinea-pigs agglutinated, in a dilution of 1—100, the stock culture of *B. typhosus*.

It is plain that in this experiment the *B. typhosus* was ejected from the sewage to a height of 6 feet 9 inches.

Further experiments on the same lines were then carried out with the *B. prodigiosus*, an agar growth emulsified in water being added to the sewage. The same apparatus was used as in the previous experiments, the vertical pipe being gradually lengthened by the addition of 2-ft. lengths of 6-inch piping. The *B. prodigiosus* was recovered from the plates suspended 8 feet 9 inches and 11 feet 9 inches above the sewage in the trap.

It was thought that possibly the resistance produced by the passage of the sewage through the trap might have caused the projection of the special bacteria employed into the air contained in the vertical pipe.

Accordingly, in the next series of experiments the trap was removed and the apparatus fitted up as shown in fig. 3. Plates of nutrose-agar were suspended in the vertical pipe, and the sewage mixed with *B. prodigiosus* was made to flow at a rate not exceeding 3 feet per second through the horizontal pipes, which were never more than half filled with the sewage. The special organism was again recovered from plates suspended 11 feet 9 inches above the sewage in the trap.

As in all the above experiments a very rich emulsion of the special organism, such as would never be found under natural conditions, was added to the sewage, it was determined to repeat the experiments, employing only 1 cc. of the emulsion, representing one-ninth of the growth on an agar slope after forty-eight hours' incubation at 22° C., to inoculate the sewage. The same results were obtained as when the rich emulsion was used.

It is evident from these experiments that special bacteria can be ejected from flowing sewage independently of the resistance offered to the flow by the disconnecting trap. But as the plates were left in the vertical pipe for more than twenty-four hours, it is possible that the colonies in the plates might have been derived from particles dried on the surfaces of the pipes. In order to exclude this source of the bacteria, the experiments were repeated again, but the plates were withdrawn immediately the sewage had ceased to flow, each experiment only occupying twenty minutes. As before, colonies of *B. prodigiosus* were found in all the plates, showing that they must have been produced independently of dried particles carried by currents of air. As there were very few bubbles visible to the naked eye in the flowing sewage, it is not very probable that all the microbes found in the plates were ejected into the air by the bursting of bubbles. I think it is possible that many of the colonies were caused by the ejection of minute infected droplets

from the flowing sewage. Gross splashing is out of the question, as the sewage was flowing at a comparatively slow rate, and plates were found infected at a height of 11 feet 9 inches above the surface of the fluid.

The next series of experiments were undertaken to test the value of the disconnecting trap as a means of protecting a house drainage system from specific bacteria present in the air of the sewer into which the house drain discharges.

The apparatus employed is shown in fig. 5. It was a combination of the arrangements used in the experiments already described. The straight run of piping, with the vertical pipe attached to it, represents the sewer and an attached ventilating pipe; joining the sewer is the house drain, the air in which is separated from that in the sewer by the usual disconnecting trap. The vertical pipe

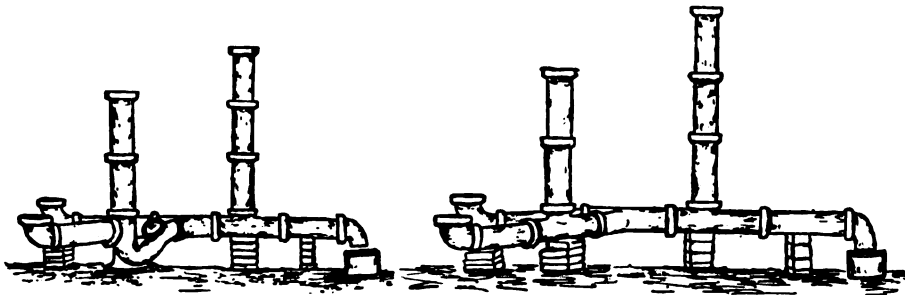


FIG. 5.

FIG. 6.

above the trap, represents the air inlet or outlet, as the case may be, of the house drainage system. Plates of nutrose-agar were suspended in both vertical pipes. Sewage inoculated with *B. prodigiosus* was then allowed to flow at a rate not exceeding 3 feet per second through the pipes representing the sewer. The flow of sewage was continued for half an hour on two successive days; the plates were then withdrawn and incubated at 22° C. Colonies of *B. prodigiosus* were found in the plates placed in the ventilating pipe of the sewer, but none were present in the plates placed in the ventilating pipe above the disconnecting trap.

The experiment was repeated again, but during the flow of the infected sewage through the sewer the disconnecting trap of the house system was repeatedly flushed with three gallons of sewage. It was thought that during the flushing of the trap, microbes in the sewer air might possibly enter the house drainage system. This never occurred, the plates on the house side of the disconnecting trap never showed any colonies of *B. prodigiosus*.

The vertical trap was then removed and the apparatus arranged as shown in fig. 6.

Inoculated sewage was made to flow through the sewer as before, and every five minutes a three-gallon flush was passed through the house drain. Under these conditions colonies of *B. prodigiosus* appeared in the ventilating pipe of the house system as well as in that of the sewer. These results show that a disconnecting trap prevents microbes present in the sewer air from passing into the house drainage system.

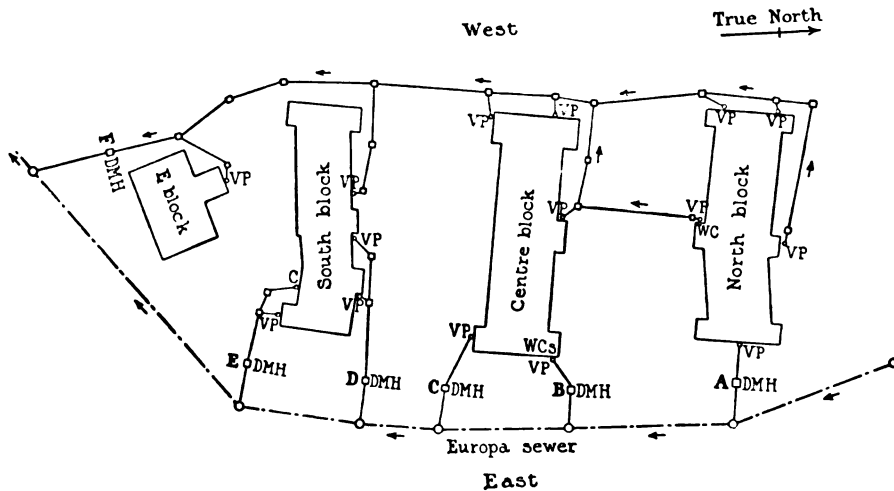
The next series of experiments were made with actual drainage systems.

In the first experiment a newly laid system of a house in the town was tested by suspending plates in the junction and disconnecting chambers. A plate was also fastened in front of the air inlet of the system, the air inlet being provided with a mica valve. An emulsion of *B. prodigiosus* was placed in the pan of the w.c. of the house, which was then flushed out. The plates were removed twenty-four hours later and incubated, with the result that colonies of *B. prodigiosus* were found in every plate. "Air" plates exposed showed no signs of the special organism used in the experiment.

The second experiment was made at the military hospital, plates being suspended in the top of a 6-inch ventilating pipe connected with a w.c. in the basement. The plates were 50 feet above the ground level. A rich emulsion of *B. prodigiosus* was placed in the pan of the w.c. and the contents were then flushed in the usual manner. At the end of twenty-four hours the plates were removed and incubated for forty-eight hours, when all the plates were found studded with colonies of the special organism.

The third experiment was made in connection with the drainage at the east end of the Centre Block of the military hospital. At the north-east corner of the block there is a ventilating soil pipe, 6 inches in diameter, receiving the contents of a row of w.c.'s placed in an annexe on the first floor of the hospital. The soil pipe is connected by a 6-inch drain to a disconnecting chamber (B), which is 10 feet deep, and discharges its contents by a short drain into a 9-inch sewer running along the Europa Road. At the south-east corner of the block there is a similar disconnecting chamber (C), which receives the drainage from a w.c. in the basement and is also connected to the Europa sewer. There are six inspection chambers, with ventilating covers at the road level, and a 6-inch ventilating pipe on the Europa sewer, between the Centre Block and the Europa Pass Barracks, a distance of some 200 yards (see

Plan of hospital drainage). Plates were suspended in the top of the hospital soil pipe, at the north-east corner, some 30 feet above the junctions of the w.c.'s, in the disconnecting chambers (A), (B), and (C), in all the inspection chambers connected with the Europa sewer and in the top of the ventilating pipe of the sewer. A rich emulsion of *B. prodigiosus* was then placed in each of the pans of the w.c.'s, which were then flushed. Twenty-four hours later the plates were removed and incubated at 22° C. After forty-eight hours all the plates, except those in disconnecting chamber (A), were found studded with colonies of the special organism employed. Plates exposed on the ground close to the Centre Block for twenty-



four hours were also incubated, but no signs of the *B. prodigiosus* appeared in them.

Judging by the results obtained with the experimental installations, it was expected that the special organism would be found in the hospital soil pipe, disconnecting chamber (B), and in the chambers and ventilating pipe of the sewer. But as the disconnecting chamber (C) at the south-east corner of the Centre Block is not in any way connected with the w.c.'s receiving the emulsion of the *B. prodigiosus*, and is separated from the Europa sewer by a modern disconnecting trap, the special organism should not have appeared in this chamber. The experiment was repeated again three times, and, in addition to the places already mentioned, plates were also suspended in the disconnecting chambers (D) and (E)

connected to the east side of the South Block. The plates were left *in situ* for twenty-four hours, and then incubated as before. Colonies of *B. prodigiosus* appeared in the same places as in the previous experiment, but none were found in the chambers (D) and (E).

It was then evident that there must be some means by which the disconnecting chamber (C) was placed in communication with the Europa sewer. A careful examination of the bottom of the chamber was made, and it was found that there was no plug in the cleaning arm of the disconnecting trap; consequently, the chamber was in direct communication with the air in the sewer. Plugs were found firmly fixed in the cleaning arms of the disconnecting traps in the chambers (D) and (E), and prevented micro-organisms in the sewer air from entering the chambers.

The cleaning arm in the chamber (C) was then firmly plugged and the experiment repeated. The result was that colonies of *B. prodigiosus* appeared in the plates placed in the hospital soil pipe and in the chamber (B), but none appeared in the plates suspended in chamber (C), proving conclusively that the patent cleaning arm had been the channel through which the *B. prodigiosus* entered this chamber in the previous experiments.

As a control of the above experiments, plates were next placed in the inspection chambers connected with the west end of Centre and South Blocks. The contents of these chambers are removed by a separate drain, which passes along the west of the hospital into the disconnecting chamber (F), close to the south gate of the hospital. No colonies of *B. prodigiosus* were found in any of the chambers, although the plates were treated precisely as in the previous experiments. A fortnight later the experiment was repeated, but on this occasion the pan of a w.c. connected with the drain on the west side of the hospital was inoculated with *B. prodigiosus*, and the w.c.'s on the east side were left in their natural condition. The result was that colonies of the special organism appeared in the plates placed on the west of the hospital, but none were found on the east side.

In all the above experiments the plates were left in the chambers and soil pipes for twenty-four hours, consequently the *B. prodigiosus* might have resulted from dried particles of the growth separated from the walls of the pipes and chambers and carried upwards by air currents, as well as from the bursting of bubbles and ejection of droplets from the flowing sewage. In order to determine whether the separation of dried particles was the source from which

the bacteria were obtained, the experiments were repeated, but on these occasions the plates were withdrawn as soon as the w.c.'s had been flushed, each experiment only taking twenty minutes. When incubated the plates showed practically as many colonies of the *B. prodigiosus* as in the previous experiments, showing that special bacteria may appear in the air of the chambers and pipes independently of the separation of dried particles.

It might be objected that in the experiments just related the bacteria were suspended in water and had no organic matter adhering to them such as would be the case under natural conditions. When faecal material is flushed down w.c.'s and carried through a drainage system, it is probable that the *B. coli* and the *B. typhosus* in the case of typhoid stools, will have an organic envelope which may materially affect the results.

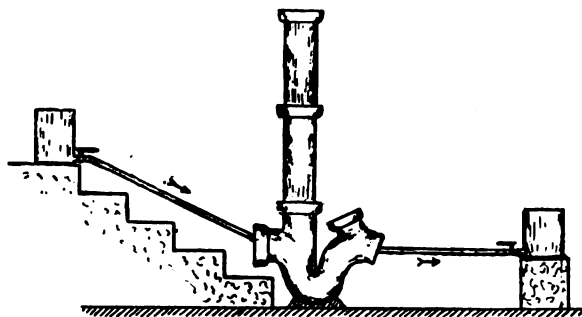


FIG. 7.

In order to ascertain whether the objection raised had any force, plates of litmus-lactose-nutrose-agar were suspended in the ventilating pipe of the Centre Block for twenty-four hours and then incubated. All colonies having a reddish tint were fished and carefully studied, the result being that typical members of the coli group were readily isolated. Plates were also suspended in large inspection chambers connected with one of the main sewers of the town, about ten feet above the flowing sewage. The plates were removed at the end of four hours and incubated, when typical members of the coli group were again readily isolated. As a final test, the possibility of the *B. typhosus* being ejected from typhoid stools was ascertained by using the apparatus shown in fig. 7. The trap was filled with sewage, and litmus-lactose-nutrose-agar plates, the media facing upwards, were suspended in the vertical pipe, which was afterwards covered with a glass plate. A typical stool, obtained from a case of enteric fever under treatment in the military hospital, was then

mixed with two gallons of water placed in the can connected by indiarubber piping, 1·5 inches in diameter, with the house side of the trap. The taps were next opened, and the contents of the can having passed slowly through the trap, were collected in the can connected to the P outgo of the trap. The taps were then turned off and, the cans having been changed, the infected sewage was again passed through the trap. This procedure was followed until the sewage had passed twelve times through the trap. The plates were then removed and incubated. Next day several transparent blue colonies were observed, these were fished and planted on agar slopes. The growths resulting were tested with an anti-typhoid horse serum, and one was found to be completely agglutinated by the serum diluted 1—500. The growth was then submitted to the usual tests, which showed that under the conditions mentioned a true *B. typhosus* had been carried up the vertical pipe.

Two days later the experiment was repeated with another stool from the same patient, with the result that three colonies of *B. typhosus* were isolated, one being in a plate 2 feet above the trap and the other two in a plate 3 feet 6 inches above the trap.

The experiments were so conducted that no splashing could possibly occur, and on looking through the glass plate on the top of the vertical pipe, when sewage was flowing through the trap, a few bubbles were seen bursting at the surface of the fluid. The pipes and trap employed were quite new, and had not been used in any of the previous experiments.

These results show that bacteria existing in sewage under natural conditions can be ejected into the air in the same manner as the naked bacteria used in the experiments already recorded.

Conclusions.

The experiments show that :—

(1) Specific bacteria present in sewage may be ejected into the air of ventilation pipes, inspection chambers, drains, and sewers by (a) the bursting of bubbles at the surface of the sewage; (b) the separation of dried particles from the walls of pipes, chambers, and sewers, and probably by (c) the ejection of minute droplets from flowing sewage.

(2) A disconnecting trap undoubtedly prevents the passage of bacteria, present in the air of a sewer, into the house drainage system.

(3) An air inlet, even when provided with a mica valve, may be a source of danger when it is placed at or about the ground level.

NOTES ON STAFF WORK AS APPLIED TO THE MEDICAL SERVICES.

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THE following notes on Staff work as applied to the Medical Services, in connection with a Staff ride held by the Director of Staff Duties, are published at the request of the Director-General, Army Medical Service, and by permission of the Director of Staff Duties.

The Staff ride took place between May 27th and May 31st, 1907. The "General Idea" was that the British Islands were divided into three separate and independent kingdoms, namely, *Northland* (Scotland and a portion of the north of England), *Westland* (Ireland and south-west Wales, with part of Monmouthshire, the Welsh possessions being called "Cambria" for purposes of the ride), and *Eastland* (the remainder of England and Wales). Formerly, the whole of Wales was supposed to belong to Westland, but Eastland took from it the northern portion about twenty years previously. The object of the movement in Westland was to recapture its lost provinces. Northland remained neutral, but was in sympathy with Westland. Roads, railways, telegraphs, seaports and fortifications, with some slight modifications, were to be taken as they actually exist, and war establishments as laid down in the Field Service Pocket Book of 1907. The capital of Westland was Dublin, of Eastland, London. The army of the former was four divisions, with special army troops, a cavalry division of three brigades and fortress troops; of the latter, six divisions, with army troops, cavalry division of four brigades, and fortress troops.

The peace stations of these were :—

Westland.

Cavalry Division. 1st Brigade at Brecon, 2nd Brigade at Mullingar, 3rd Brigade and Divisional Troops at Dublin.

1st Division in Cambria, with No. 1 Brigade at Merthyr Tydvil, No. 2 at Builth Wells, No. 3 and Divisional Troops at Carmarthen.

2nd Division at Dublin (Brigades 4, 5 and 6).

3rd Division at Curragh (Brigades 7, 8 and 9).

4th Division at Limerick (Brigades 10, 11 and 12).

Army troops at the Curragh.

Eastland.

Cavalry Division. 1st Brigade and Divisional Troops at Aldershot, 2nd at York, 3rd at Blackburn, 4th at Hereford.

1st Division, Brigades 1 to 3, and Divisional Troops at Aldershot.

2nd Division at Cambridge (Brigades 4, 5 and 6).

3rd Division at Sheffield (Brigades 7, 8 and 9).

4th Division at Manchester (Brigades 10, 11 and 12).

5th Division at Worcester (Brigades 13, 14 and 15).

6th Division at Gloucester (Brigades 16, 17 and 18).

Army troops, 1st Mounted Brigade at Aldershot.

2nd Mounted Brigade at Shrewsbury.

Other troops at Aldershot.

Eastland's army was divided into Groups A, B and C, with headquarters respectively at Worcester, Sheffield and Aldershot. During the operations of the Staff ride only Group A, namely, the Cavalry Brigade, the 2nd Mounted Brigade and the 5th and 6th Divisions, came into play.

Of Westland's army the 1st Division in Cambria and the 1st Cavalry Brigade at Brecon came into play and were re-inforced during the period by the 2nd Division and 3rd Cavalry Division from Dublin.

Briefly, the operations that took place were as follows. In the earlier stages Westland distributed the available cavalry brigade along the Eastland-Cambria frontier for reconnoitring purposes, and concentrated its Division at Brecon, with small garrison posts left behind at Builth and Merthyr Tydvil; while Eastland proceeded to seize Three Cocks railway junction in Cambria, on the main road to Brecon, with the 4th Cavalry Brigade from Hereford and the 2nd Mounted Brigade from Shrewsbury; to throw its 5th Division on the road to Brecon at Hay and Three Cocks Junction, with one brigade directed to Abergavenny; and to send its 6th Division in three columns of one brigade each against Abergavenny, Pontypool and Newport. Subsequently Eastland altered this movement and sent the whole of the 5th Division on to the Brecon Road at Three Cocks Junction and the whole of the 6th Division on to Abergavenny.

The next stage was the cavalry encounters at Three Cocks Junction with subsequent movement of Westland's 1st Cavalry Brigade to Crickhowell. This was followed by the 5th Division taking up a position across the Brecon road in advance of Three Cocks Junction, by the movement of the 1st Division of Westland

against it from Brecon, and by the disembarkation of Westland's reinforcements at Swansea and their subsequent movement to Merthyr Tydvil, thence by road towards Crickhowell and Abergavenny to meet the 6th Division of the Eastland forces and 4th Cavalry Brigade that were pushing their way up the Brecon road from these places, and had already dispersed Westland's 1st Cavalry Brigade into the hills west of the Brecon road on the right bank of the Usk.

The final stage was an indecisive action fought out on the Brecon Three Cocks road, and the retirement of the 6th Division, taking the 4th Cavalry Brigade with it, from Crickhowell, owing to the advance of Westland's reinforcements from Merthyr Tydvil.

This brief abstract of the general and special ideas and narrative of events will enable the following notes to be followed, but the notes are in reality a criticism of more detailed work, and are only given as a general guide to the nature of Staff work as applied to medical services. The subject is a more or less new one for the Royal Army Medical Corps. In foreign armies, more especially in Austria, but also to a considerable extent in France and Germany, work of this kind has been highly developed, and these notes may help to foster its development here.

As the Commander of neither army had with him a Director of Medical Services, nor was there any one to represent technically the administrative work of the medical services with divisions, detailed orders in connection with the distribution, opening and closing of medical units, the evacuation of sick and wounded, and problems of field sanitation, were not to be expected. The work of the Staff ride brought out, however, much that is instructive, and showed the need of wider knowledge of the use and handling of medical services in the field.

The following notes are based on actual orders issued by various commanders, and will serve to illustrate the nature of the instruction that may be obtained in this direction on Staff rides.

It was assumed that the "field ambulances" had mobilised with their divisions and were ready to advance as soon as the divisions were ready to advance, although there was no specific mention of them in the "Special Idea," beyond noting the position of divisional troops at the time of mobilisation.

As regards "cavalry field ambulances," Eastland had one despatched from Aldershot to arrive at Hereford at 2 p.m., on May 28th, in order to join the 4th Cavalry Brigade, and Westland had one sent to join the Cavalry Brigade at Brecon. The 2nd Mounted

Brigade, it may be assumed, had a cavalry field ambulance mobilised with it at Shrewsbury, as one is included in the composition of a mounted brigade in war establishments.

The position of field medical units on May 27th, therefore, was as follows :—

Eastland Forces, Group A.

Three field ambulances at Worcester for 5th Division.

Three field ambulances at Gloucester for 6th Division.

One cavalry field ambulance at Shrewsbury for 2nd Mounted Brigade.

One cavalry field ambulance on the way to Hereford for 4th Cavalry Brigade.

Forces in Cambria.

Three field ambulances at Carmarthen for 1st Division.

One cavalry field ambulance at Brecon for 1st Cavalry Brigade.

No arrangements of medical services for evacuating or distributing sick and wounded along the lines of communication were ready on either side. But Eastland had the large military hospitals at Aldershot, Netley, Woolwich and Devonport available, and there were general and stationary hospitals in mobilisation stores. In Cambria there were no such units in mobilisation stores. Such would have to be sent from Westland, but permanent military hospitals exist at Pembroke Dock, Brecon and Cardiff.

The general officers commanding both armies were thus faced with medical problems from the very beginning. There was every prospect of a conflict, with numerous casualties, by May 29th or 30th; an effective distribution of the field ambulances in the divisions was a matter of importance; the link between them and the lines of communication had to be established; the arrangements for evacuating wounded to the fixed hospitals had to be thought out; and sanitary questions, more especially those connected with ports of disembarkation, had to be considered.

As a rule, these matters were only slightly touched upon in operation orders, and in the majority of instances it was evident that the new field medical units and the method of handling and utilising them were not well understood.

For example, the 1st Cavalry Brigade orders, dated Brecon, May 27th, were to the effect that its "*field ambulance*" should divide into three sections, one going to Brecon, one to Abergavenny, and one to Builth. A *field ambulance*, it is true, does possess three sections, but the general officer commanding had no *field ambulance*

under his command. He had only a *cavalry field ambulance*, which is a unit of quite different composition, and capable of being divided into two sections only. When it is remembered that its transport consists of two water carts, two forage carts, four light ambulance wagons, and six heavy ambulance wagons, the impossibility of splitting up a cavalry field ambulance into three sections is evident.

The general officer commanding the same cavalry brigade also issued the following order on May 29th :—

“The Principal Medical Officer will arrange to send the wounded into Crickhowell and establish a hospital there.”

There is no principal medical officer in a cavalry brigade. Each regiment in the brigade has a medical officer attached to it, and there is an officer in command of the cavalry field ambulance, but there is no special officer to whom an order such as the above could be given. Besides, the order to establish a *hospital* in any particular place is not within the province of a general officer commanding a brigade in the field; it would come from the general officer commanding the army, and his Director of Medical Services would deal with the matter. All that the general officer commanding the cavalry brigade need have done to carry out his intention, which was a perfectly sound intention, would have been to order the tent division of his cavalry field ambulance to open at Crickhowell. The officer commanding the ambulance would then, without further instructions, select a suitable place or building and cause his bearer division to bring the wounded to it. He would also, without further orders, have placed himself in communication with the Army Director of Medical Services as regards evacuating the wounded to whatever hospital the Director of Medical Services might determine.

It may be noted, however, that subsequent events would have inevitably led this cavalry field ambulance to be captured by the enemy. It would then be dealt with under Articles 6, 9, 12 and 14 of the Geneva Convention of 1906.

On the Eastland side the movements of the cavalry field ambulances with the 4th Cavalry Brigade and 2nd Mounted Brigade are not very clear. On May 28th the general officer commanding 4th Cavalry Brigade issued detailed orders for the advance of his brigade from Hereford on Three Cocks. The orders are dated 8 p.m., and the “Special Idea” notes that a cavalry field ambulance would begin to arrive at Hereford at 2 p.m. that day to join the 4th Cavalry Brigade. Yet no orders were issued regarding this ambulance, and, as far as the arrangements of the general officer commanding went, it would have remained at Hereford while the

brigade to which it belonged was seizing Three Cocks Junction. It may be that the general officer commanding included the ambulance in his general order respecting 2nd Line Transport, but this is scarcely the correct method of dealing with a distinct unit that has just joined his command. He had a good opportunity of dividing his ambulance into its two sections, and ordering Section A to follow his right column and Section B his left column. Or, if he did not wish the movement to be disclosed by the heavy ambulance wagons, he had it in his power to order the bearer division only to proceed with the columns, leaving the tent division of the ambulance to follow with the 2nd Line Transport. In any case, the disposal of the cavalry field ambulance in sections, or in divisions, or as a whole, should have been noted in these orders. The same general officer commanding, on May 29th, mentions cavalry field ambulances in the plural, presumably referring to the cavalry field ambulance of his own brigade and the cavalry field ambulance of the 2nd Mounted Brigade which had come under his command. He orders them to remain in their present positions, but there is no previous order to show that they were ordered to proceed at all from their original bases at Hereford and Shrewsbury. The general officer commanding 2nd Mounted Brigade, in orders of May 29th, speaks of his *field ambulance* remaining in bivouac in Gwernyfed Park. This order seems to clash with the order of the general officer commanding 4th Cavalry Brigade, just referred to, but it is possible that the latter used the term "ambulances" in the plural by mistake, or he may have meant ambulance wagons. In any case the order is ambiguous and, taken with that of the 2nd Mounted Brigade on the same day, confusing. The term "field ambulance" is again used in speaking of a cavalry field ambulance. The mistake is very similar to that of using the term "division" in speaking of a "cavalry division."

When the Cavalry Brigade landed from Westland at Swansea, and proceeded to Merthyr Tydfil, there is no mention of its being accompanied by a cavalry field ambulance. It was despatched either purposely or by an oversight without a cavalry field ambulance. The general officer commanding the Westland Forces in Cambria should have made inquiries on this point, and have had the oversight corrected, if he thought it necessary.

The handling of the field ambulances of divisions brought out several points that are worthy of attention in connection with the operation orders.

The 6th Division of the Eastland forces alone seemed to place its field ambulances in a proper position. The orders on this point,

issued at 9 a.m. on May 27th, in which a field ambulance was ordered to accompany each of the columns marching on Newport, Pontypool and Abergavenny, were good. The 5th Division orders, on the other hand, would have led to an awkward condition of affairs. In the first instance, the general officer commanding this division, in Operation Orders, No. 1, of May 27th, ordered a flank guard, composed of one brigade and other details, to proceed by rail to Abergavenny Junction, and, in the same orders, ordered a field ambulance for the brigade to proceed to Hay. It is difficult to understand why the field ambulance was not despatched in the same direction as the brigade to which it was attached. In any case it could not have been where it was wanted, when fighting in the neighbourhood of Abergavenny took place. It would have been about a day's march distant. The same orders refer to the movements of the "Remainder Royal Army Medical Corps." This is a vague expression, because Royal Army Medical Corps *personnel* are distributed with combatant units, and with head-quarters, as well as with field ambulances. The order could only refer to the field ambulances, and should mention them as such, and not as "Remainder Royal Army Medical Corps." These orders were, however, cancelled by Operation Orders, No. 2, of the 5th Division, dated Worcester, May 28th, when the division was ordered to detrain at Hereford and Hay, presumably arriving at its destination early on the morning of the 29th. The field ambulances, however, were ordered to march behind the Ammunition and Supply Columns, from Worcester *via* Castle Frome to Hereford, as soon as possible. The distance from Worcester to Hereford by road is at least thirty miles, and at the best one could not have expected the field ambulances to reach the latter place before the evening of the 29th, and then only with difficulty. They would then be tired out, in all probability, and still some thirty miles distant from Three Cocks and the Brecon Road, where it was anticipated the division would be actively engaging the enemy, and endeavouring to push forward on Brecon. Thus, during the first important action of the campaign, the whole of the division would have been practically without its medical units, and the only line of medical assistance would have been the solitary medical officer with each battalion. Under the circumstances there could have been no proper collection of wounded, no reception of them into suitable dressing stations, no arrangements for clearing the division of its casualties, and no adequate attempt to save the lives of seriously injured, for at least a day or two after the action had taken place.

In a move of this kind, one field ambulance, at any rate, should have been pushed on immediately behind the advance guard, and one or both of the others brought up immediately behind the main body.

In the case of the Westland Divisions, the disposal of field ambulances is vague and, in one instance at least, confusing. The three ambulances of the division were, presumably, at Carmarthen. There is nothing to show that one had been attached to each of the brigades at Builth and Merthyr Tydfil. Yet, when the division is ordered to concentrate at Brecon, mention is made of the "field ambulance" only (general officer commanding 1st Division, Operation Order No 1, of May 27). This may be an error in copying. If the expression used had been "the field ambulances," in the plural, the order would have been correct. When the division comes into action on May 29th, on the Brecon-Three Cocks Road, we have the following confusion in the orders: General officer commanding the division notes in his operation orders, 6 p.m., of May 29th, that the three field ambulances will march in rear of the main body, *i.e.*, to take up the line across the road Brecon-Three Cocks Junction, occupied by its 1st Brigade. But on the same date the general officer commanding the 1st Brigade notes that he had sent a message at 8.15 a.m. to the general officer commanding the division asking for a field ambulance, and that the field ambulance had arrived at 10 a.m., having started before the message was received. He also notes that a dressing station was established at a certain point during the day. Evidently the general officer commanding 1st Division, in ordering his three ambulances forward at 6 p.m., had forgotten that one had already gone on in the early morning. It may be noted here that it is scarcely advisable to state in orders that a *dressing station* has been established at such and such a place. It would be more correct to say that "the *Tent Division* of Section A (B or C) of Field Ambulance has opened at (place)."

In future Staff rides there are two main points to remember in connection with the mobile medical units, *i.e.*, the cavalry field ambulances and the field ambulances. The first is that they are not only divisible into sections, but that each section has a bearer and a tent division; the former for collecting and bringing in the wounded, and the latter for receiving and temporarily taking care of them. The bearer division is simply the old bearer company, and the tent division the old field hospital; and it is advisable, when an action is pending, to move the former to an *échelon* considerably more advanced than the latter. This point was

apparently not understood by any of the general officers commanding. The second point is that in disposing of field ambulances in order of battle, the probable course of the action and the anticipated number of casualties should be considered. If the action is likely to be a running action, with a few scattered casualties and a rapid advance over a considerable distance, it would be inadvisable to open all the field ambulances for work. Probably one complete ambulance, or a section of each of the ambulances, would be sufficient, the other ambulances or the remaining sections being held back in reserve, ready to be pushed on at once, as required. If, on the other hand, the fighting is concentrated against certain strong positions, with anticipated heavy casualties, the field ambulances should be brought well up, and opened at convenient places near the area of fighting. But, even then, it is well to keep one ambulance, or section of an ambulance, in reserve until the very end.

The Staff ride brought out no definite problems regarding the evacuation of the wounded. It was only in the cavalry action at Three Cocks Junction that details of casualties are given. They were comparatively few, and it was estimated that the ambulance wagons of the cavalry field ambulances would have been sufficient to bring them as far as the railhead. The problem of evacuating a supposed case was correctly worked out by the staff of the General Officer Commanding, Eastland. But in future Staff rides many problems might be set to test the sufficiency of ambulance transport material in dealing with given numbers of casualties, and to determine how far local resources or other means of transport could be made available. In dealing with problems of this nature it is necessary to note that there are at least four categories of wounded: (1) Those that can walk; (2) those that can be removed sitting up; (3) those that must be carried lying down; and (4) those that should be left alone, and whose removal should not be attempted. It is also necessary to remember the probable proportion of killed to wounded. To help in the solution of such problems, therefore, the following proportions may be noted as the average of experiences in recent wars:—

Killed to wounded as 1 to 4.

Wounded fit to walk	...	...	...	...	20 per cent.
„ . requiring sitting accommodation	...	...	...	...	60 „
„ . requiring lying down accommodation	...	...	...	...	15 „
„ . unfit for transport	...	...	...	...	5 „

The problems connected with evacuation of wounded would depend not only on these categories but also on the distance to

which they have to be taken to the lines of communication, and on the nature and amount of transport material available. When these factors are determined it would be possible to calculate, fairly accurately, the time taken to clear the area of operations of masses of casualties, and to anticipate the arrangements necessary for dealing with them when they reach the lines of communication.

As regards the lines of communication medical arrangements, little was attempted by either the Eastland or Cambrian commander-in-chief. The latter, in his orders of May 27th (No. 1), ordered his principal medical officer to form a stationary hospital at Brecon and a general hospital at Carmarthen. But both of these are definite field units, with *personnel* that has to be mobilised and with material held in mobilisation stores. The principal medical officer in Cambria could not form them, unless they were already in the country, and presumably they were not. It seemed a perfectly sound course to establish a general hospital at Carmarthen, but for this purpose an immediate requisition should have been sent for one to be despatched from Westland. Similarly with stationary hospitals, an immediate requisition should have been sent to Westland for whatever was required. Pending their arrival the existing military hospital and barracks at Brecon might have been utilised and kept ready for sick and wounded, and local civil practitioners might have been called in to assist. Orders to that effect would, therefore, have been more correct. Action of this kind was subsequently taken by the general officer commanding the forces in Cambria in his communication of May 29th, to the adjutant-general, Dublin, when he requested permission to accept the offer of the civil hospitals at Swansea to place 600 beds, &c., and of the Chamber of Commerce two hospital ships, at his disposal. These were excellent suggestions, and, if the general officer commanding had remembered that there were no general or stationary hospitals mobilised in Cambria, he would have done better to accept the offers at once on his own initiative, informing the War Office, Dublin, that he had done so, instead of first asking permission.

A curious mistake was made by the general officer commanding 1st Division, in repeating the orders of the general officer commanding the forces in Cambria, relative to this formation of a general and stationary hospital. He ordered his own principal medical officer to carry out the order. But the principal medical officer of a division (the correct term now is administrative medical officer), has nothing whatever to do with general or stationary hospitals. These are essentially lines of communication

units, and the orders of the general officer commanding the forces in Cambria on this point would have been noted and carried out by the general officer commanding lines of communication and his deputy director of medical services (*i.e.*, the principal medical officer of the lines of communication).¹

The use of the new medical unit, the clearing hospital, was not referred to in orders. It would have been the duty primarily of the general officer commanding an army to order a clearing hospital up to any point, and of the general officer commanding lines of communication to give effect to the order, but a general officer commanding a division should be aware of the fact that a clearing hospital is the unit by means of which his field ambulances are cleared, and it would be within his province to ask the general officer commanding the army to send a clearing hospital to any convenient point within his area of operations. Whenever there is risk of his ambulances becoming clogged with wounded and unable to follow the movements of the division, he should invariably do so, if he finds that the general officer commanding the army has not already anticipated his wants. During the operations of the Staff ride, a clearing hospital should have been brought up to Hay, and another to Abergavenny, as early as possible, for clearing the field ambulances of the 5th and 6th Divisions, and one to Brecon for the Westland forces. A clearing hospital should also have been embarked at the same time as, or immediately after, the division and cavalry brigade from Westland, and sent up to Merthyr Tydfil or Brecon. In fact, two clearing hospitals should have been sent, one for the 1st Division, already in Cambria, and one for the division sent from Westland.

The general officer commanding, Eastland, made use of an ambulance train for evacuating wounded from clearing hospitals at Hay and Abergavenny. It was ordered to Hereford, and from there to go in two portions, one portion to Hay and the other to Abergavenny. It is questionable whether an ambulance train can conveniently be divided into two portions; but, as neither the equipment nor composition of the train is to be found in any documents, it is impossible for a general officer commanding at

¹ It may be useful to note that the term principal medical officer, formerly applied to all commands, has been abolished because of the confusion that used to arise sometimes from not knowing to which principal medical officer an order referred. This is now obviated by the use of the designations director of medical services, deputy director and assistant directors of medical services, and administrative medical officers, for armies, lines of communication, and divisions respectively.

present to know what the nature of the unit called "an ambulance train" is. War establishments give the *personnel* of a train for the conveyance of 100 lying down, and the mobilisation instructions for the Army Medical Service show three ambulance trains as ready for mobilisation, but nowhere is there a scale of equipment or statement of the composition of the trains. This is a point that might be considered elsewhere, and, at present, until more details are known, one cannot say whether the unit is divisible into two sections or not. The use of ambulance trains was of much importance to Eastland, just as the use of hospital ships would have been to Westland. With clearing hospitals suitably placed, and ambulance trains running regularly, Eastland could have evacuated the sick and wounded direct to the large military hospitals at Netley, Aldershot, Devonport and Woolwich, without mobilising stationary hospitals for intermediate posts on the lines of communication. Minor posts, such as rest or refreshment stations at the chief halting places along the line of railway, would have met the requirements of the operations in this respect, and with organised local branches of a National Red Cross Society might have been established at once by voluntary effort.

As regards the prevention of disease in the army, there seems to have been some misconception of the new lines of communication units called "sanitary sections" and "sanitary squads." In the communication of May 29, sent by the General Officer Commanding forces in Cambria to the Adjutant-general, War Office, Dublin, on the subject of sanitary and medical services, sanitary squads are spoken of as being formed of men trained in each unit for the duties of a sanitary squad; and reference is also made to the formation of sanitary squads for divisional headquarters and for cavalry, infantry, and artillery brigades.

The communication is quite correct as regards the formation of sanitary squads for each combatant unit out of men belonging to the unit and trained for the purpose; but it is incorrect as regards the formation of sanitary squads specially for divisions and brigades, and also as regards the statement that one non-commissioned officer and three men have been trained in each unit in the methods of purifying water. The sanitation of the headquarters of divisions and brigades would come directly under the sanitary officer on the division headquarters, who would generally supervise the work of sanitation within the units of the division and brigades so far as the sanitary requirements of the field army are concerned. No special squads would be formed for this purpose, because with the mobile troops it is desirable that sanitation

should be the concern of each unit and of each individual in it. But as regards water purification, this is the duty of one non-commissioned officer and four privates (two to each water cart) of the Royal Army Medical Corps, who are attached in war to each battalion for the purpose. They are not trained in the unit, but in the Royal Army Medical Corps. The units called specially "sanitary sections" and "sanitary squads" are, on the other hand, lines of communication units of the Royal Army Medical Corps, and mobilise with a *personnel* definitely laid down in war establishments. All that the general officer commanding forces in Cambria need have done was to ask for the required number of sanitary sections (*i.e.*, two sections, one for the base and the other for the head of his lines of communication, or one for Swansea and the other for Brecon, and as many sanitary squads as there are likely to be posts on his lines of communication). It would be left to the general officer commanding lines of communication to issue the necessary orders for placing the sanitary sections and squads; and they would be under the deputy-director of medical services, lines of communication.

It was brought to notice that two brigades bivouacked alongside a stream, one higher up than the other, on a hill outside Abergavenny; and the question arose whether this was dangerous from a sanitary point of view. Such a disposition of troops would only be justifiable if it was absolutely necessary for the strategical or tactical requirements of the moment. Latent cases of enteric or other infectious disease might have been present amongst the troops on the upper portion of the stream, and any pollution of the stream by them might readily have caused a considerable, possibly a very extensive, outbreak of disease amongst the troops lower down. This would not necessarily have shown itself at once, but two or three weeks later, and perhaps at a critical stage in the operations.

In any case, were the conditions unavoidable, special precautions should have been taken with regard to the water supply, and all units should have been warned.

A number of other points were suggested during the Staff ride, but to deal with them instructively it would have been advisable to have had an officer, Royal Army Medical Corps, to act as Director of Medical Services on the headquarters of the general officer commanding, Eastland army, and another to act in a similar capacity for the forces in Cambria, with a junior Royal Army Medical Corps officer as assistant director with each, in addition to the Royal Army Medical Corps officer attached to the Directing Staff.

The following are some of the problems with which they might deal, attention being specially directed to acquiring information regarding local resources, and to calculating the time and requirements for clearing the Field Army of its sick and wounded :—

(1) What shelter is to be provided for troops—tents, bivouacs, with or without *tentes abris*, or billets in towns and villages? If the last, what is the condition of the inhabitants as regards epidemics or infectious diseases, and how far will this alter the arrangements for moving or sheltering troops?

(2) Are the cavalry and field ambulances to carry tents for sick and wounded, or is accommodation to be provided in buildings? If the latter, what buildings are to be marked down for the purpose, and how many will they accommodate?

(3) What arrangements are to be made for clearing field ambulances during or after an engagement?

The Director of Medical Services and Divisional Administrative Medical Officers will want information, in anticipation of an engagement, regarding the probable area of an engagement and the probable number of casualties. What transport is available for clearing the ambulances, and how long will it take, with this transport, to get the probable number of casualties to a clearing hospital and to railhead?

(4) What arrangements are to be made for further distribution of sick and wounded down the lines of communication? What lines of evacuation are fixed for this purpose, and to what hospitals are the patients to be distributed?

(5) What are the available local resources on or near an area where an engagement is likely to take place, as regards :—

(i.) Civil medical men?

(ii.) Chemists' shops and supplies of material for dressings, &c.

(iii.) Local transport material, suitable for conveyance of wounded?

(iv.) Local civil hospitals?

(6) What proportion of the casualties is likely to be—

(i.) Left on or near the area of an engagement as unfit for transport?

(ii.) Removed, lying down, to line of railway and clearing hospital, and down line to stationary or general hospitals?

(iii.) Removed, sitting up, to same destination as in (ii.)?

(iv.) Sent back to clearing hospital on foot?

(7) What arrangements are to be made for evacuating these different categories in accordance with the anticipated proportions of each?

ANNUAL REPORT ON THE SURGICAL DIVISION OF THE ROYAL VICTORIA HOSPITAL, NETLEY, FOR THE YEAR 1906.

BY MAJOR F. J. MORGAN.
Royal Army Medical Corps.

SUMMARY OF THE SURGICAL OPERATIONS PERFORMED AT THE ROYAL VICTORIA
HOSPITAL, NETLEY, DURING THE YEAR 1906.

Cases of interest will be noted, in some detail, in the Report following this Summary.

Operations		Number of cases	Completely successful	Partially successful	Failed	Died
<i>Tumours :</i>						
Excision of	Lipomata. Multiple	.. 1	.. 1	.. —	.. —	.. —
	Fibroma .. ..	.. 2	.. 2	.. —	.. —	.. —
	Osteoma .. ..	.. 2	.. 2	.. —	.. —	.. —
<i>Cysts :</i>						
Excision of	Sebaceous Cysts ..	.. 2	.. 2	.. —	.. —	.. —
	Thyro glossal Cysts ..	.. 1	.. 1	.. —	.. —	.. —
	Bursal Cysts .. ..	.. 1	.. 1	.. —	.. —	.. —
<i>Evacuation of large or deep abscesses :</i>						
(1) By free incision and drainage		.. 4	.. 2	.. —	.. —	.. 2
(2) By incision, erasion, and closure		.. 1	.. 1	.. —	.. —	.. —
<i>Removal of foreign bodies</i> .. ..		.. 5	.. 5	.. —	.. —	.. —
<i>Veins :</i>						
Excision of varices .. ..		.. 15	.. 15	.. —	.. —	.. —
<i>Lymphatic organs :</i>						
Erasion of glands .. ..		.. 2	.. 2	.. —	.. —	.. —
Excision of glands .. ..		.. 17	.. 17	.. —	.. —	.. —
<i>Nerves :</i>						
Union of divided nerve .. ..		.. 1	.. 1	.. —	.. —	.. —
<i>Skin and subcutaneous tissue :</i>						
(1) For cicatricial eversion of eyelid		.. 1	.. —	.. 1	.. —	.. —
(2) For onychia .. ..		.. 4	.. 4	.. —	.. —	.. —
(3) Plastic operation for bed-sores		.. 1	.. 1	.. —	.. —	.. —
<i>Bones :</i>						
(1) Excision of part of a bone ..		.. 3	.. 1	.. 2	.. —	.. —
(2) Erasion of carious bone ..		.. 10	.. 6	.. 4	.. —	.. —
(3) Removal of sequestrum ..		.. 8	.. 8	.. —	.. —	.. —
(4) Trephining for abscess of bone		.. 1	.. 1	.. —	.. —	.. —
(5) For un-united fracture ..		.. 2	.. 1	.. —	.. 1	.. —
<i>Joints :</i>						
(1) Incision, with drainage ..		.. 4	.. 3	.. 1	.. —	.. —
(2) Excision .. ..		.. 3	.. 2	.. —	.. 1	.. —
(3) Removal of loose bodies ..		.. 3	.. 3	.. —	.. —	.. —
(4) Removal of displaced cartilage		.. 5	.. 5	.. —	.. —	.. —

Operations.	Number of cases	Completely successful.	Partially successful.	Failed	Died
<i>Muscles, Tendons, Fasciæ :</i>					
(1) Tenotomy	1	1	—	—	—
(2) Division of fascia	1	1	—	—	—
(3) Division of cicatricial adhesions ..	1	—	—	1	—
<i>Amputations :</i>					
(1) Forefinger	2	2	—	—	—
(2) Thigh (re-amputation)	1	1	—	—	—
<i>Face, Nose, Mouth :</i>					
(1) Removal of post-nasal adenoid growths	1	1	—	—	—
(2) Removal of uvula	1	1	—	—	—
(3) Removal of tonsils	1	1	—	—	—
<i>Eye :</i>					
Excision of eyeball.. .. .	1	1	—	—	—
<i>Eye appendages :</i>					
For lachrymal duct obstruction	1	1	—	—	—
<i>Ear :</i>					
Removal of polypus	1	1	—	—	—
<i>Larynx and Trachea :</i>					
(1) Excision of bronchocele	2	2	—	—	—
(2) For closure of laryngeal fistula ..	1	1	—	—	—
<i>Thorax :</i>					
(1) Incision and drainage of pleural cavity: (a) With excision of part of a rib.. .. .	2	1	1	—	—
(2) Incision and drainage of lung cavities	2	—	1	—	1
<i>Abdomen :</i>					
(1) Excision of vermiform appendix ..	8	8	—	—	—
(2) For radical cure of hernia	12	12	—	—	—
(3) For abscess of liver	16	10	2	—	4
(4) Exploration of liver	3	3	—	—	—
(5) Dilatation and drainage of liver sinus	3	3	—	—	—
<i>Rectum and Anus :</i>					
(1) For fistula-in-ano	4	3	1	—	—
(2) For stricture of rectum. By dilatation	1	1	—	—	—
(3) For hæmorrhoids. By ligature and excision	5	5	—	—	—
(4) For imperforate anus	1	—	—	—	1
<i>Bladder and Urethra :</i>					
(1) Cystoscopic examination	3	3	—	—	—
(2) Cystotomy. Suprapubic	2	2	—	—	—
(3) For stricture of urethra. By internal urethrotomy	3	2	—	1	—
" " " By perineal section ..	2	2	—	—	—
<i>Male generative organs :</i>					
(1) For varicocele. By excision of veins	3	3	—	—	—
(2) For hydrocele. By excision of parietal part of sac.. .. .	4	4	—	—	—
(3) Castration	2	2	—	—	—

Operations	Number of cases	Completely successful	Partially successful	Failed	Died
<i>Various minor operations under a general or local anæsthetic :</i>					
Abscess opened, scraped and drained ..	6	5	1	—	—
Sinus " " " " ..	10	8	2	—	—
Circumcision	7	7	—	—	—
Movement of joint for partial ankylosis..	3	2	—	1	—
Various	4	3	1	—	—
	220	190	17	5	8

One thousand two hundred and eighty-two cases were treated during the year ; 791 returned to duty ; 357 were invalided, and 14 died ; 120 remained at the end of the year. The tabulated summary of cases in which surgical operations were performed will be taken as a basis for notes on cases of interests and remarks on the work of the Division.

Tumours—Five cases were operated on : Multiple lipomata, in a patient presenting a score or so of these tumours, none of them large. Fibromata, in one case in the gastrocnemius muscle, in the other a large keloid scar. Osteomata, of compact bone, in one case springing from the shaft of the humerus, in the other from the tibia. All the cases were uncomplicated and returned to duty.

Other cases of tumour not operated upon.

Private D., M.N.G. Sarcoma (leg) ; died. His illness dated from a sprain at football, when, on reporting sick, he was found to have a swelling over the upper part of his right fibula, and a fracture of that bone. Sarcoma was diagnosed and the limb was amputated at the lower third of the thigh. Healed by primary union. On arrival at Netley, he had a secondary growth in the groin and a large oval tumour distending the abdomen. Severe abdominal pain. Later, vomiting, gradually becoming persistent, jaundice, emaciation, death.

Post-mortem Examination.—Secondary deposits of sarcoma in pleuræ and lungs. Oval fluctuating tumour in abdominal cavity, displacing and obstructing the intestine ; the wall of the tumour was sarcomatous ; the contents, altered blood.

Private G., M.N.G. Lympho-sarcoma (base of skull) ; died. Long history of throat affections, with swelling and ulceration of tonsils. On arrival at Netley patient pale and thin, swelling of soft palate and pharyngeal wall, hoarse, but larynx not visibly affected on laryngoscopic examination. Great difficulty in swallowing fluids. Symmetrical enlargement of glands of neck (one of which, excised for examination, showed only lymphoid tissue). The

swelling of soft palate, on being incised, gave vent to blood only, and the swelling did not subside. Pain in left side of head and face. Later, increased swelling of palate and pharynx, posterior nares blocked. Increase of pain in left side of face. Partial paralysis of left facial nerve, tongue and external rectus oculi. Asthenia, died.

Post-mortem Examination.—Whole pharyngeal wall and soft palate thickened, $\frac{1}{4}$ to $\frac{3}{8}$ inch, by new growth, ulcerated in places. The same growth invaded the bones of the base of the skull, and had grown into the sphenoidal fissure of the left side. Deep glands of neck very enlarged, but discrete. Larynx free, other organs not affected.

Cysts.—Two small sebaceous cysts, a thyro-glossal cyst, and a very large bursa over the olecranon, were excised; the operations were all simple and quite successful.

Evacuation of Large or Deep Abscesses.—These include five serious cases, three of them quite successful and two fatal.

Private C. Psoas abscess; died. A psoas abscess was evacuated at the groin on the voyage home. On arrival at Netley he was pale, thin and weak. Profuse discharge, hectic temperature. Drainage being unsatisfactory, the cavity was explored and freely opened through the abdominal wall, internal to the anterior superior spine of ilium. A large foul cavity entered, lightly scraped, irrigated and drained. Two days after, severe hæmorrhage occurred from the cavity, but ceased on treatment. Some temporary improvement followed, but he eventually got weaker and weaker and died. No cough to speak of, or lung symptoms.

Post-mortem Examination.—The lower lumbar vertebræ and upper part of the sacrum were extensively tubercular, and gave rise to long and tortuous suppurating tracts. The lungs weighed together only 26 ounces. They were atrophied and full of chronic tubercle.

Corporal R. Psoas abscess; recovery. On arrival at Netley, he had a large psoas abscess filling the right iliac fossa. The abscess was freely opened from the loin behind, by incision and dissection of the muscles between the last rib and crest of ilium. The abscess cavity was mopped, rubbed and irrigated, until free from pus and lymph. Iodoform emulsion was injected and some allowed to remain. The cavity was then closed without drainage, and the layers of divided muscle sutured, also the skin wound. A deep stitch abscess followed, but after this was opened, the patient steadily progressed to complete recovery. He gained weight

enormously and looked in robust health. On account of his antecedent spinal disease he was invalided.

Private L. Caries of spine; died. A very long case. Pain in back dating from 1903, and off and on since. On arriving at Netley he was extremely anæmic and very weak. A large abscess below the angle of the scapula was opened. Later, sinuses existing beneath the scapula, free counter-openings were made. In spite of this free drainage, he did not improve. Spinal disease suspected, but it could not be located. Later, caries of the fourth rib detected and a portion of carious rib excised. Still later, a similar state of fifth rib, near the angle, which was also excised. Careful search for any sinus leading towards the spine was always unavailing. At the last operation he was found to have partial pneumo-thorax and collapse of the left lung. One more attempt was made to relieve him, when a tract, behind the remains of the spinal end of the fourth rib, was found to lead to the sides of the adjacent dorsal vertebræ. These were found to be carious. The carious parts were scraped, after removal of the carious remains of the rib, and a clear funnel-shaped wound was left down to the diseased vertebræ. Little or no improvement however occurred, asthenia progressed, he became jaundiced, and died.

No *post-mortem* examination obtainable.

Private M. Large abscess around hip joint; recovery. His illness began with suppuration of glands in the groin, the glands were excised abroad and the wound healed. Later, two small sinuses opened in the groin. "A swelling formed in the hip," for which he was invalided. On arrival, he was in the last stage of anæmia and emaciation. Hip fixed, and leg drawn up and incapable of extension. Sinuses in groin discharging foul-smelling pus. An enormous abscess around the hip-joint. The abscess was freely opened in several places; it extended to the brim of the pelvis under the iliacus muscle, around the trochanter major and down the inner aspect of the thigh; its contents were stinking. Large drainage tubes placed in above-mentioned directions. The hip-joint was not involved. Extension applied to the limb. Slow but uninterrupted progress was made to complete recovery, with a straight limb and movable hip-joint, but being a delicate lad it was not considered advisable to return him to duty, and he was invalided.

Private B. Intra-abdominal abscess; recovery. An invalid for tubercle of lung, transferred from Medical Division on account of a deep inflammatory swelling of the right groin. The swelling

occupied the right iliac fossa and the tissues of the hip outside the crest of the ilium. A cautious dissection inside the upper part of Poupart's ligament, through the œdematous tissues, led down to the post-cæcal region. Here a fœtid abscess was opened and drained. Steady improvement occurred and the discharge lost its foul smell. A sinus then formed in the subcutaneous tissues towards the thigh and required opening up and scraping. He continued to improve, and eventually got quite well, but being delicate and tubercular he was invalided.

Removal of Foreign Bodies.—The following were removed by excision: A jagged piece of brass cartridge case recently blown into the palm of the hand, smaller pieces producing other lacerations. Silk, from a hernia operation wound, from abroad. An ivory peg used for ununited fracture of the tibia abroad. Silver wire from a jaw, fractured and wired abroad. A needle from the palm of the hand, a recent injury. All these cases ended in complete recovery.

Veins.—Varicose veins were excised in fifteen cases, in thirteen cases in one leg, and in the remaining two in both legs at the same time. In twelve cases a short piece of the saphena vein, near its termination, was excised, as well as varices. In one case this only was done.

All the cases were uneventful and returned to duty.

Lymphatic Glands.—The seventeen cases of excision of glands were mostly inguinal glands, enlarged and suppurating as the result of venereal disease. In five cases a large mass of inguinal glands was excised bodily, in three cases an extensive dissection of the side of the neck was required for the removal of tubercular glands, and in one case a deep dissection in the left iliac region was necessitated for removal of glands lying adjacent to the external iliac artery, and giving rise to cellular inflammation in the iliac fossa.

All the cases were completely successful.

Nerves.—The case of union of a divided nerve was that of Gunner L., who had his median nerve divided at the wrist in an accident. The nerve had been united by operation soon after the accident abroad, but unsuccessfully. The ends were found at some distance from one another, in a dense mass of fibrous tissue. The ends were resected and united with fine silk. The function of the nerve was restored, and the patient returned to duty.

Skin and Subcutaneous Tissues.—A plastic operation for great deformity of the face, the result of destruction of the nose by

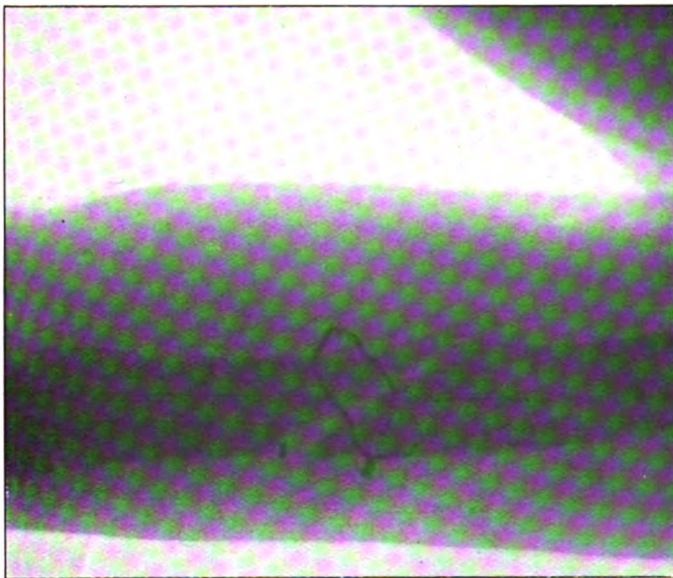
syphilis, was as successful as possible, in the case of Private C., for cicatricial eversion of the lower eyelid.

Four operations, all completely successful, were performed for onychia, "ingrowing toe-nails." In three, both great toe-nails were partially excised.

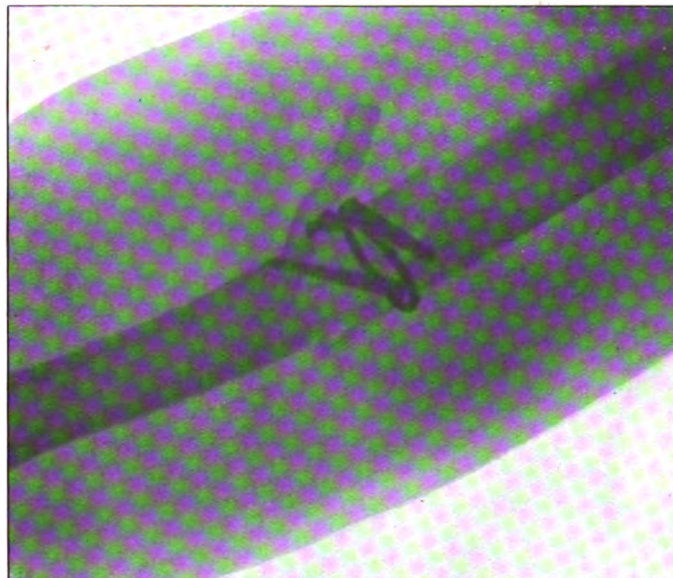
In the case of Lieutenant H., a very successful operation was done for a large and intractable bed-sore over the great trochanter, the result of enteric fever. The callous tissues were dissected, and a free incision having been made in the buttock, healthy skin was slid over the trochanter and kept in place by sutures.

Bones.—The parts of bones excised were portions of ribs in a case of caries of spine, already mentioned, and part of a fibula, necrosed as the result of a shot-gun accident; the latter patient is still in hospital and convalescent. Sequestræ were successfully removed from the nose, palate, lower jaw, and tibia. The case of trephining for abscess of bone was in the case of a patient with long-standing inflammation about the right great trochanter of the femur, in which an abscess was found and evacuated. He recovered completely.

Bombardier E.—Ununited fracture of humerus. This non-commissioned officer broke his right humerus two and a half years ago. Non-union followed. Eight months after the fragments were wired together in India. He was invalided for non-union. At Netley, January 1st, 1906, he was operated on again. The wire was found broken, the ends of the bone side by side, and joined by tough fibrous tissue. A slice was sawn from either end of bone obliquely, and the fresh bony surfaces fixed together by wire passed through holes in the bone. Primary union followed, but though the arm was kept in a plaster of Paris splint, no union occurred. April 21st, 1906, a further operation. The bones were found in good position and united by fibrous tissue. Again a slice of bone was sawn from either end, and this time the fragments were immovably united by a screw above and below and a stout wire loop around. A few days after, the wound freely suppurated. Everything seemed very hopeless, and I had visions of an early amputation. However, all sutures in soft parts were removed, the wound opened from end to end down to the bone, and a counter-opening made behind, in which a well-perforated drainage tube was kept. Very thorough irrigation and dressing, morning and evening, overcame the sepsis, fever ceased, and the wound became a healthy, granulating one. The granulating surfaces were drawn together by strapping. The mechanical means by which the bones were united were so satisfactory as to



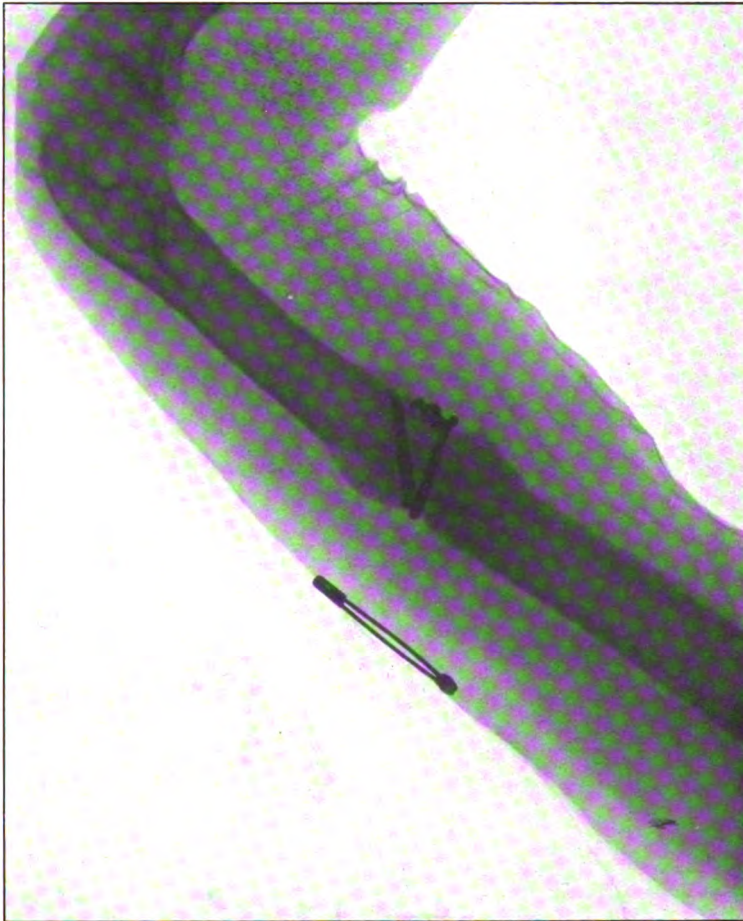
Bombardier E.—Ununited fracture of humerus. Skiagraph taken some time after first operation at Netley. No callus. Non-union.



Bombardier E.—Ununited fracture of humerus. Skiagraph after second operation at Netley. Taken through plaster of Paris splint. Suppuration had nearly ceased. Drainage tube seen.

To illustrate "Annual Report on the Surgical Division of the Royal Victoria Hospital, Netley, for the Year 1906."
By Major F. J. MORGAN R.A.M.C.





Bombardier E.—Ununited fracture of humerus. Skiagraph taken through dressings at a later period after second operation at Netley. One screw has come out. Good formation of callus. Sound union of bone.

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stand endless careful handling without giving way. By June 17th, 1906, it was possible to put up the limb in plaster of Paris, with an opening back and front for dressing. August 20th, 1906, firm union and only a small sinus left. X-rays show a good amount of callus. One of the screws came out through the sinus. He was invalided September 11th, 1906. I have since heard from him that his arm is as strong as the other, but that occasionally a little discharge escapes from the sinus. Possibly the remaining screw or wire will eventually require removal.

Joints.—A chronically inflamed metatarso-phalangeal joint of the great toe was completely and quickly cured by free incision of the joint and subsequent drainage. The man returned to duty. A chronically inflamed knee becoming acutely inflamed, was also freely incised and drained with excellent result, but the patient had to be invalided on general grounds. The other two cases were incision and drainage of a knee, after excision, in the same patient, to be presently alluded to.

Excisions.—Private T.—Excision of head of radius for partial dislocation. Primary union and quite successful so far, but he had to be invalided on account of accompanying mal-union and weakness of the forearm following a fracture of the ulna abroad.

Private F.—Partial excision of wrist for tubercular disease. The disease was very extensive and amputation almost inevitable. An attempt was made to save the hand, but unsuccessfully, and it will shortly be amputated.

Private S.—Wound of knee joint caused by the bite of a panther in India. The knee was semi-flexed and ankylosed on arrival at Netley. An attempt at movement under an anæsthetic was unsuccessful. Excision was advised and performed on December 1st, 1906. The excision seemed to be most successful at the time, but in a few days suppuration occurred. The joint was freely opened and drained on two occasions within a few days, and, as the result of painstaking irrigation and dressing, the sepsis was overcome. Steady progress to complete healing followed, and the limb was put up in plaster of Paris at the end of December. There is every prospect of bony union and a most useful limb, with only about an inch of shortening.

Loose bodies in the shape of flattened cartilage-covered discs were removed from the knee joint in three cases, and semi-lunar cartilages split, folded, or displaced in five cases. Six of these eight returned to duty, and two were invalided on grounds other than the state of their knees, which, objectively, were quite successful.

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Muscles, Tendons and Fasciæ.—The only case calling for note in this group is a failure to improve a little finger in which previous severe inflammation had produced cicatricial flexion.

Amputations.—Two forefingers, hopelessly damaged by suppuration following injuries abroad, were successfully amputated. The partial re-amputation of thigh was for conical stump and persistent sinuses.

Face, Nose, Mouth.—Child P.—Post-nasal adenoid growths. The naso-pharynx was almost completely blocked. The growths were removed by the curette and finger nail, with very satisfactory result.

Eye.—The only operation required was for enucleation of an eyeball disorganised by previous gonorrhœal suppuration. Forty-six cases of inflammatory affections of the eye were treated during the year, of which seventeen were invalided ; and forty-one cases of error of refraction, of which twenty-two were invalided.

Ear.—Inflammatory conditions: Admitted 45, invalided 15. Perforation membrana tympani: Admitted 69, invalided 34. Deafness: Admitted 18, invalided 12.

Larynx and Trachea.—Two cases of very large goitre were successfully operated on by excision of half the gland. In the larger case the mass extended from beneath the lower jaw to the clavicle, and necessitated an extensive dissection of the deep structures of the neck. In both cases primary union occurred, the remaining half of the enlarged gland diminished rapidly in size, and the patients returned to duty. The closure of laryngeal fistula was for an aperture left after a suicidal wound of the neck, and was successful.

Thorax.—Two cases of extensive empyema were treated by excision of part of a rib and free drainage. One case, which was uncomplicated, was completely successful, but in the other, which was secondary to abscess of the liver, relief was only given for some time before a fatal termination, due to multiple abscesses of the liver and dysentery.

Private S.—Lympho-sarcoma (lung) ; died. A foreign invalid, transferred from the Medical Division for empyema, pus having been aspirated from the right side of the chest. Patient thin and weak, cough, dyspnœa, scanty expectoration. Irregular fever. Pulse 120. Respiration 36. Right side of chest very dull on percussion, with feeble entry of air, diminished fremitus and resonance. A piece of the fifth rib in the anterior axillary line having been excised, the underlying pleura and adherent lung was incised. At a depth of

about an inch, through consolidated lung tissue, which did not bleed much, a large cavity with irregular soft walls was entered, and from which much foul-smelling pus escaped; a counter-opening was made through an intercostal space lower and further back. He was very much relieved for a time. Later, a second resection was required for better drainage through the posterior opening. Though his lung cavities were freely drained he went from bad to worse and died.

Post-mortem examination. The lower two-thirds of the right lung was a mass of new growth, which filled the posterior mediastinum. The upper part of the mass surrounded and compressed the right bronchus and superior vena cava. Some small abscesses were scattered through the right lung, but the only one of any size was contracted and drained.

ABDOMEN.

EXCISION OF VERMIFORM APPENDIX—EIGHT CASES.

	Previous attacks	Conditions before operation	State of vermiform appendix	Complications	Result
1	Two ..	In quiescent state, but an indistinct swelling could be felt	Long and curled up. No adhesions	None	To duty.
2	Five in three months	Local tenderness and fulness	Kinked, 3 ins. long	None	To duty.
3	One slight	Local tenderness and fulness	Thickened. Hemorrhagic points in mucous membrane	Much vomiting and hiccough first two days. Rather weak scar	Complete recovery. A retired officer.
4	Two ..	Quiescent state. No local signs	Very adherent. Cæcum thick	None	To duty.
5	Two ..	Quiescent state. No local signs	Adhesions enclosing appendix. Tip attached to sheath of psoas	None	To duty.
6	Off and on for ten years	Irregular fever. Rising leucocytosis. Rigidity and tenderness over cæcum. Diarrhœa	Cæcum densely adherent. Appendix buried behind, soft and ulcerated	Free suppuration on third day. Complete recovery. Very firm scar	To duty.
7	Three attacks in twelve months	Marked tenderness, some fulness	S-shaped appendix. Adhesions	None	To duty.
8	Two ..	Frequent pain in past year. No local signs	5 ins. long. No adhesions	None	Still in hospital. Convalescent.

Excision of Vermiform Appendix.—The only case of excision of the vermiform appendix requiring further notice is No. 6 in

the summary—Gunner R. He gave a long history of attacks of pain following constipation for ten years or so. He reported sick on the voyage home. He had fever and the usual signs of appendicitis. He was seriously ill on arrival at Netley, and was treated in the Medical Division pending the subsidence of his acute attack; but continued illness and increasing leucocytosis, with rigidity of the abdominal wall over the right iliac region, led us to believe suppuration was taking place. A free incision through the abdominal wall, over the cæcum, discovered adhesions between the peritoneum, omentum and cæcum, and a small abscess was opened in the omentum. With great difficulty, and some damage to the very thickened wall of the cæcum, this was eventually freed, and the appendix was found behind, buried in adhesions, and passing upwards behind the ascending colon. It broke through a soft and ulcerated area, during separation. The stump was clamped, sterilised with carbolic acid, and invaginated into the cæcum. The rest of the appendix was then shelled out. A drainage tube was passed up the loin behind the colon, and another to the brim of the pelvis. The wound was mostly closed by all-through silkworm gut sutures. On the third day free suppuration occurred. Most of the sutures were removed. The drainage was good, and, with careful dressing, the sepsis was overcome. The wound became healthy, closed by granulation, and he eventually made a complete recovery, returning to duty with a very sound scar. The operation took three hours.

HERNIA.

TWELVE OPERATIONS FOR RADICAL CURE.

	Description of hernia	Complications	Results
1	Right inguinal, complete, scrotal	None	To duty.
2	Right inguinal, bubonocoele	None	"
3	Right inguinal. Relapse after operation abroad	None	"
4	Right inguinal, complete	None	"
5	Right inguinal, complete	Omentum adherent to sac	"
6	Left inguinal, complete	None	"
7	Right inguinal, complete	None	"
8	Right inguinal, complete	None	"
9	Right inguinal, large, complete. Adhesions	Hæmatoma of cord followed operation. It was absorbed	"
10	Right inguinal	None	"
11	Right inguinal, complete	None	"
12	Right inguinal, complete	None	"

Bassini's operation, or a modification of it, was employed in each case.

ABSCESS OF LIVER.

FOURTEEN CASES, IN TWO OF WHICH A SECOND OPERATION WAS REQUIRED.

Serial number	Antecedent conditions	Description	Results
1 Capt. T.	India. Dysentery. Ague	Large abscess evacuated on voyage home. Doing well on arrival at Netley. Subsequent fever and some return of pain, subsided on dilatation of the sinus and the use of a larger drainage tube. Wound soundly healed	To sick furlough for duty.
2 Sergt. W.	India. Dysentery. June, 1905	An abscess of liver opened and drained abroad, August, 1905, by incision only. Wound healed. Not long after he began to expectorate pus, and was doing so on arrival at Netley. Thin, weak and very ill. Another abscess evacuated December 21, 1905. Temporary improvement, less expectoration, but progress unsatisfactory. Explored higher up, empyema found and evacuated. Asthenia. <i>Post-mortem</i> examination: Thirty or forty other abscesses of liver. One of these, sub-diaphragmatic, opened through an ulcerated hole in the diaphragm into a large empyema, and excavation of base of lung. Only one kidney	Died.
3 Pte. K.	India. Good health. Constipation	Explored for liver-abscess on voyage home, none found. Very ill and emaciated on arrival here. Large liver; cough. Exploration <i>nil</i> . A few days after, explored again. A liver abscess found very high up, evacuated and drained. Temporary improvement. Signs of empyema. Large empyema evacuated. Later another abscess suspected, found and evacuated. Intractable diarrhoea. Asthenia. <i>Post-mortem</i> examination: An enormous liver, full of abscesses of all sizes, one opening into colon, another perforating diaphragm. Dysenteric ulceration of colon, mostly the cæcum	Died.
4 Pte. L.	India	An invalid with a sinus from liver, opening between last two ribs. A piece of 11th rib excised. Cavity in liver scraped and drained. Uninterrupted recovery	To duty.
5 Gr. S.	India	Invalid for inflammation of liver, on furlough near by. Tender swelling to right of epigastrium. Liver abscess evacuated by simple incision and drained. Uninterrupted recovery	To duty.
6 Pte. C.		R. A. M. C. orderly, some time home from abroad. Slight symptoms for some time. "Dyspepsia." Enlarged liver, very little tenderness. A large, chronic abscess of liver evacuated and drained. Wall of abscess smooth. Uneventful recovery	To duty.
7 Pte. G.	India. Abscess of liver opened abroad	Very ill on arrival. Wound healed. Very large liver and signs of empyema. He died whilst an exploratory puncture was being made. <i>Post-mortem</i> examination: Right thorax and greater part of right lobe of liver one huge abscess cavity communicating by a large hole in diaphragm. Ulceration of colon	Died.

ABSCESS OF LIVER—*continued.*

Serial number.	Antecedent conditions	Description	Results
8 Gr. I.	Mauritius. Abscess of liver opened on voyage home	On arrival, he had a discharging liver abscess sinus. Signs of another abscess. Exploration <i>nil</i> , July 3, 1906. Abscess in right lobe found, evacuated and drained, July 13, 1906. Expecto- rating pus. Exploration <i>nil</i> , September 29, 1906. After much improvement, he re- lapsed. An abscess found under his healed wound and opened. Expectoration of pus steadily diminished, and on his discharge, at his own request, he was practically well	Invalided
9 Pte. S.	He had been expectorating pus largely for some time	Usual signs of liver abscess. An abscess found high up, evacuated and drained. His expectora- tion of a mug full of pus daily ceased at once, and he made an unusually quick recovery. Great gain in health and weight	To duty.
10 Cpl. B.	India. Dysen- tery	Emaciated and very weak on arrival. Usual signs of liver abscess. Pus found at first puncture. Large abscess of right lobe, evacu- ated and drained. Uninterrupted recovery	To duty.
11 Pte. F.	India. Dysen- tery	Very weak and ill. Usual signs. Very large abscess of right lobe evacuated and drained. Walls of abscess seemed to be a flaccid bag, in places out of reach of the finger. Uninter- rupted recovery	To duty.
12 Pte. D.	India. Diar- rhœa. Three operations for liver abscess. Expectorating pus	Expectorating liver abscess pus on arrival. Sinus from right lobe of liver. Sinus dilated. Liver explored and pus struck, deeply, and at upper and back part of right lobe; abscess evacuated and drained. Expectoration soon ceased. Sinus still discharging, but he has gained flesh greatly and feels very well	Conva- lescent. Probably to duty.
13 Loc.-Cpl. J.	India. Nodiar- rhœa or dys- entery	Very ill, and emaciated on admission here. Bulging and fluctuation over liver in axillary line. Large abscess opened and necrosed rib excised. Very uphill convalescence. Still has an irregular cavity. Improving generally in health	Conva- lescent. Probably to duty.
14 Pte. F.	India. Dysen- tery	Admitted in an almost moribund state. Severe dysentery going on. Jaundiced. Pitting on pressure over liver. Too ill to be taken to operating theatre. Very large abscess of right lobe of liver evacuated by simple incision between ribs and drained. Severe dysentery continued. Asthenia. <i>Post-mortem</i> examina- tion: the large abscess in right lobe well drained. An abscess of left lobe had burst into the peritoneal cavity. Very severe dysenteric ulceration. One ulcer nearly perforating	Died. Diag- nosed "dysen- tery" and not changed

ABSCESS OF LIVER.

CASES OF LIVER ABSCESS NOT OPERATED ON AT NETLEY.

Serial number	Antecedent conditions	Description	Results
Pte. W.	India. Dysentery	Liver abscess opened in India. Wound healed. Recrudescence on voyage home, an abscess evacuated on board ship. Implication of base of lung. Expectoration. On arrival, copious discharge, severe bronchitis and pleurisy, dyspnoea, hectic fever. <i>Post-mortem</i> examination: Multiple abscesses of liver. Consolidation of lung bases. Bronchitis. Pleurisy	Died.
Pte. C.	Egypt. Dysentery	Abscess of liver evacuated at Alexandria. Emaciated and anæmic on arrival. Irregular pyrexia. Other abscesses suspected, but patient too weak for operation. <i>Post-mortem</i> examination: Liver 130 ozs., full of abscesses of all sizes. Right lung adherent, base consolidated	Died.
Gr. C.	India. Dysentery. Expectoration of pus	Large abscess of liver evacuated on voyage home. Moribund on arrival. Died next day. <i>Post-mortem</i> examination: General pleurisy. Single abscess of right lobe of liver, well drained. Large abscess in base of right lung and a smaller one above	Died.

A very large number of cases of recovered abscess of the liver arrived during the year at Netley, with their operation wounds healed and on the way to complete restoration to health. Of a total of eighty cases admitted, all returned to duty with the exception of one invalided and six who died.

Rectum and Anus.—The only case in this group requiring further notice is that of an infant, of premature birth, with imperforate anus. The infant was not seen until a day and a half after birth, and was then thin, weak and jaundiced. An incision was made and the termination of the rectum opened half an inch from the surface. The gut was brought down and united to the skin by a few sutures. The child lived twenty-four hours and passed motions freely, but was too feeble to live.

Bladder and Urethra.—Suprapubic cystotomy was successfully performed in two cases:—

Dr. C.—Stone in the bladder. A history of pain and hæmaturia led to examination of the bladder, and the detection of a very hard stone of some size. The usual operation was performed, and the bladder closed by two rows of catgut sutures. The superficial parts were all but completely closed, a small drainage tube being placed

in the lower angle of the wound. A Jacques' catheter and continuous drainage was employed for several days. No leakage of urine took place, but there was a slight discharge of sero-pus for some days from the drainage tube. The wound was soundly healed in three weeks, and the patient returned to duty.

Lance-Sergeant C.—Stricture of urethra. Patient had a very tight stricture which was only passable by the flexible bougie attached to Berkeley Hill's urethrotome, which was being used for internal urethrotomy. The stricture having been divided, the urethrotome was withdrawn, but the filiform bougie remained in the bladder, though all care had been taken in screwing it on. As it could not be extracted by a lithotrite, cystotomy was obligatory. The bladder was opened above the pubes by a small incision, the bougie extracted, the bladder closed by two rows of catgut sutures, and a small drainage tube placed in lower corner of the wound, which was closed. The after progress was uneventful. His wound healed soundly, he passed a full stream of urine, and returned to duty in three weeks.

Internal Urethrotomy, by Berkeley Hill's Method and instrument, was done in three instances for tight and resilient strictures, in two cases with complete success, and in the other cases with no good result, as the patient's old false passages invariably diverted the instrument subsequently used, and he also had a perineal fistula; he was subsequently operated on by perineal section with complete success.

Perineal Section was performed in one case as above-mentioned, the wound being left nearly open on account of fistulæ, to close by granulation, and in the other for impassable stricture. In the latter case it was possible to sew the divided tissues around a Jacques' catheter, tied in to form a urethra, and the remainder of the wound was all but closed. He made a quick and perfect recovery.

Male Generative Organs.—Three cases of varicocele were operated on by excision of the mass of veins. Primary union and a successful result followed, and the patients returned to duty. The same results were obtained in four cases of radical cure of hydrocele, in which the greater part of the parietal part of the sac was excised. There were two cases of castration in which a testicle and adherent scrotal skin were removed for tubercular disease. Both cases did well, and being free from signs of tubercle elsewhere, returned to duty.

The minor operations detailed require no remarks.

Case of Private H.—Tubercle of kidney (no operation); died.

His illness dated from September, 1904, when he had frequent micturition and pain about the bladder. No stricture, calculus, or enlargement of prostate. He was thin and weak on arrival at Netley, had constant pelvic pain, and his urine always contained much pus. No tubercle bacilli found. No response to medicinal treatment or local treatment of bladder. Later, fulness and tenderness of left loin. Epididymi enlarged and hard. Too ill for any operation. He became emaciated, asthenic, and died. *Post-mortem* examination: Lungs universally adherent and containing tubercle throughout. Left kidney much enlarged, full of pus, and buried in inflammatory tissue. Left ureter thickened. Bladder infiltrated with tubercle, as also prostate and testicles.

ANÆSTHETICS

were given as under :—

Ether	74 times.
Chloroform	99 „
Ether and Chloroform..	15 „
A. C. E.	8 „
Nitrous Oxide Gas	24 „
Ether and A. C. E.	1 „
	<hr/>
	216
	<hr/>

Local anæsthesia was induced

By Eucaïne and Adrenalin ..	8 times.
„ Cocaine	7 „
„ Ethyl Chloride Spray ..	41 „
	<hr/>
	56
	<hr/>

In no case was any untoward effect produced attributable to the anæsthetic.

SKIAGRAPHS

were taken as follows :—

Skull	3	Knee	6
Jaw	5	Foot	14
Spine	10	Femur	8
Thorax	5	Tibia and Fibula ..	6
Shoulder	12	Humerus	12
Elbow	11	Radius and Ulna ..	7
Wrist	3	Ankle	2
Hand	10	For Stone in Kidney	5
Thumb	1		<hr/>
Hip-joint	18	Total	133
			<hr/>

Screen examinations were made forty-seven times.

REPORT ON VENEREAL DISEASES.

Foreign Invalids, Transfers and Local Cases.

Syphilis.—Two hundred and thirty-eight cases of syphilis were under treatment during the year; of them 44 remained from the previous year, and 21 remained in hospital at the end of the year; 178 were discharged to duty and continued treatment, 38 were invalided and 1 died. The number invalided this year compares very favourably with that of the preceding year: 16 per cent. and 37 per cent. respectively. This is mainly due to a notable diminution in the number of advanced cases of disease in the tertiary stage, invalided from abroad, particularly India, and is to be accounted for, in my opinion, by the increasing practice of the intramuscular injection of mercury and the system of continued treatment and supervision. Most of the invaliding was for cases remaining over from last year, and for cases received in the early part of the year.

The intramuscular injection of "mercurial cream" was introduced during the year for the treatment of all cases suitable for it, and is being used in an increasing proportion of cases. Besides the cases shown in the following table as treated by that method alone, nearly all the cases shown as "mixed treatment" received injections as well as other treatment.

Thirty-five cases were given courses of Zittman treatment during the first half of the year with most satisfactory results, except in two cases, in one of which the condition, though very suggestive of syphilis, and resisting other treatment, proved to be lymphosarcoma of the tonsil and pharynx. In the latter half of the year the class of cases received responded to ordinary treatment or yielded to further treatment by iodipin. Iodipin, given by mouth or injection, has proved efficacious in several cases benefited but not cured, by Zittman treatment, and in milder tertiary cases after courses of mercury by intramuscular injection. One very striking instance of the value of iodipin is in the case of Lance-Corporal C., a very debilitated and anæmic man with tertiary ulceration of the skin and fever. His blood was repeatedly examined for the detection of any cause for his long-continued fever, but always with a negative result. Various lines of treatment were followed with no result, until iodipin, 10 per cent., was given by the mouth in half-ounce doses morning and evening. An immediate diminution of fever occurred, and it ceased in three days. A corresponding improvement in his general condition followed and his ulcers healed, but his cachetic condition necessitated invaliding.

Amongst several remarkable cases of recovery from the most hopeless condition of syphilis in its latest stages, is the following :

Private C.—On arrival at Netley he had a general rupial eruption. The central bones of his face and skull, nasal, vomer, ethmoid, palate, and palatal processes of superior maxillæ, were all necrosed. Many of his teeth were loose, in suppurating sockets, and his face and eyelids were inflamed. He was truly a horrible spectacle, and exhaled such a sickening odour as hardly to be tolerable in a large ward in which he was placed alone, and surrounded with deoderants on screens. Every resource of treatment, tonic, nutritive, mercurial and Zittman, was at one time and another brought to bear on him, and the necrosed bones were removed as soon as possible. In ten months he was completely restored to health though shockingly deformed, the centre of his face being a great cavity lined with mucous membrane. He was supplied with an artificial nose and tinted spectacles. His recovery was due to the devoted care of Lieutenant McConaghy, R.A.M.C., and several orderlies.

The *fatal case of syphilis* was as under :

Private D. contracted syphilis in 1905 at Rangoon. He had a "sore" under the prepuce, which was slit up. Early persistent headache; macular rash. Mercury and potash iodide by mouth. By March 29th, 1906, he had so far improved as to be discharged from hospital. In April, 1906, his legs began to be weak, and shortly after he had complete paraplegia, loss of reflexes, and incontinence of urine and fæces. Treated by "specific" mixture. In May he had pneumonia, and bed sores formed. July, 1906—gangrene of heels; lower limbs contracted. Deep bed sore over left hip, femur exposed. August, hip joint exposed in wound, and later the shaft of the femur. Calcium iodide, gr. x., twice daily. October—general condition improved, wound at left hip granulating. Some bed sores better, others advancing. Invalided to England.

November, 1906.—On arrival at Netley he was in the last stage of emaciation. Very large bed sore over sacrum, another over left hip, in which the femur was exposed, numerous others over bony prominences. Paraplegia and incontinence of urine and fæces.

In spite of the most careful nursing he went from bad to worse, and died December 18th, 1906.

No *post-mortem* examination made.

Soft Chancre.—There were *thirty-one* cases of *soft chancre* under treatment; all but one were local cases. None was very severe and all returned to duty.

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Sixty-six cases of gonorrhœa were treated, of which five were invalided for gonorrhœal rheumatism. *The irrigation treatment*, as described by Major Pollock, R.A.M.C., was introduced early in the year, and has been most efficacious in the early and thorough cure of gonorrhœa.

SYPHILIS.

FOREIGN INVALIDS, TRANSFERS AND LOCAL CASES, TREATED IN THE ROYAL VICTORIA HOSPITAL, NETLEY, DURING THE YEAR 1906.

Method of Treatment.

Placed on Register	No. of cases	In Hospital				
		Mouth	Inunction	Injection	Other methods (tonic and nutritive)	Mixed treatment.
For the first time { Foreign invalids	20	8	—	5	5	2
As transfers from { Transfers and local	21	5	—	8	2	6
other stations { Foreign invalids	163	77	—	25	46	15
{ Transfers and local	17	9	—	4	2	2
Total ..	221	99	—	42	55	*25

* Twenty-one of these received treatment by injections of "mercurial cream."

Thirty-five patients had courses of Zittman treatment, two of them having had two courses. Eight patients were treated by iodipin, by mouth or injection.

Twenty-seven more men were placed on the register than were admitted for "syphilis"; these were men admitted for other diseases, but who were already on the register at the stations from which they came.

No cases were treated out of hospital.

No re-admissions while under treatment occurred.

None of the cases under treatment completed their treatment here during the year.

SUMMARY OF RESULTS OF ZITTMAN TREATMENT.

No. of cases	Before	After	Weight*
1	Painful swelling of knees, ankles, hip and finger	Generally better. Knees better ..	+
2	Ulceration of legs, caries of phalanx of great toe; gumma near ankle	Much improved. Ulcers healing; gumma doing well	+
3	Necrosis of upper jaw	Generally better. Necrosis stopped	-
4	Ulceration of palate and tonsils ..	Much improved	+
5	Ulceration of nostrils	Much better. Ulcers healing ..	-
6	Ulcers of head, thighs, foot; inflammation of alæ nasi	Much improved generally. Ulcers healed or healing	+

* + = Increase in weight; - = decrease in weight.

SUMMARY OF RESULTS OF ZITTMAN TREATMENT.—Continued.

No. of cases	Before	After	Weight*
7	Ulceration of nostrils and skin generally; gumma of foot	Much better. Ulcers healed; gumma absorbed	+
8	Spreading ulcer below lower lip ..	Improved. Ulcer granulating ..	+
9	Ulceration of nose	A great deal of good. Ulcers improving.	0
10	Ulceration of palate; gumma of forehead	A good deal of good. Ulcers improving	+
11	Rash; node on tibia; deafness ..	A good deal of good. Rash clearing; less deaf	+
12	Severe iritis; prominent red rash over face	A good deal of good. Rash disappearing; iritis somewhat less	+
13	Extensive ulceration of pharynx; sloughing of palate	A good deal of good. Slough separated; base of ulcer clean	-
14	Glossitis; tongue bound down ..	A good deal of good. Glossitis improved	0
15	Very large ulcer of heel; gumma of scalp	Great improvement. Ulcers better; gumma dried up	-
16	Ulceration of nose and uvula ..	Benefited. Ulcer healed.	+
17	Ulceration of face; necrosis of nasal bones, ethmoid, palate and vomer	Vast improvement. Sequestre separating; ulcers healing	+
18	Rupial ulceration of head and body	Considerable improvement; ulcers healing.	+
19	Ulceration of face and tonsil ..	Face healed; tonsil worse.	+
20	Rupia of forehead, head and body	Vastly improved. Ulcers healed..	+
21	Anæmia; stiff elbow; node ..	Greatly improved	+
22	Ulceration of tonsil; necrosis of turbinated bone; enlarged glands	Slight improvement.	+
23	Ulcers of neck and leg; swollen knee	All conditions well	+
24	Rash of face; ulceration of tonsil	Improved	+
25	Necrosis of septum nasi; ulcer of foot	Much improved. Ulceration stopped	-
26	Ulceration following destruction of nose	Considerable improvement. Ulcers healing	+
27	Rupia; enlarged glands; swelling of knees and ankles	Very much improved. Glands smaller; joints well	+
28	Inflammation of nose; ulcer of palate; rupia	Considerable improvement. Ulcers healing.	-
29	Very weak; ulceration of throat; ankles swollen; nodes	Some improvement. Still very weak	+
30	Rupia	Rupia much better. Well and strong	+
31	Ulceration of palate and fauces; knee swollen; very anæmic and weak	Not improved generally. Very weak; knee better	-
32	Many shallow ulcers; knees and ankles swollen	Improved very much. Ulcer healed; joints nearly well	+
33	Great swelling of pharynx and palate; enlarged glands	Not improved—eventually found due to lympho-sarcoma	-
34	Great swelling of tonsil and a mass of enlarged glands	Much improved. Tonsil and glands smaller.	0
35	Ulceration of neck	General improvement. Ulcers healing	0
36	General and advanced S. psoriasis..	General improvement. Rash clearing and fading	-
37	Swelling and ulceration of face ..	Much better. Ulcers healed ..	+

* + = Increase in weight; - = decrease in weight; 0 = stationary.

SUMMARY OF RESULTS OF IODIPIN TREATMENT.

No. of cases	Before	After	Weight*
1	General rupial eruption, body, limbs and face	Eruption cleared; ulcers clearing. General health better	+
2	Debilitated; ulceration of hard palate; teeth loose; gums sore	General condition better. Ulcers healing; gums not sore	+
3	Large ulcer of leg; gumma of scrotum; gumma of face; necrosis of middle phalanx of finger	Ulcer healed; gummata subsiding; finger doing well. General health good	+
4	Rupial ulceration of body	Some improvement. Ulcers healing.	
5	Debilitated and anæmic; tertiary skin lesions of face	Better; face clearing up	+
6	Persistent fever; ulcer of leg; very thin and debilitated	Fever ceased in three days; ulcer healed. General improvement.	
7	Very anæmic and weak; ulceration of fauces; knee swollen and tender; necrosis of palate	Not much improved after previous Zittman courses, but now greatly improved	+
8	Very thin and weak; ulceration of great toe and necrosis of phalanx; ulceration of wrist and ankle	Much general improvement. Toe healed; ulcers healing	+

* + = Increase in weight; - = decrease in weight.

SANITATION AND AN EARTHQUAKE.

By MAJOR E. CARRICK FREEMAN.

Royal Army Medical Corps.

MOST great earthquakes have been followed by severe outbreaks of epidemic disease, due probably to destruction of existing sanitary organisation, to exposure, starvation, and overcrowding. Some notes, therefore, on the sanitary aspects of the recent disaster in Jamaica may be of interest, especially as its scientific aspects have—so far—been overshadowed by international and political trivialities.

Since the great earthquake of 1692 occasional small shocks have always been common in Jamaica, although seldom heard of outside the Island; however, on January 14th last, without any preliminary symptoms, on a fine bright hot afternoon at 3.37 p.m., a violent earthquake occurred, the shock lasting about twenty seconds, and in an instant reducing Kingston city and its suburbs to ruin. The rumbling roar rapidly increasing in intensity until it resembled a hundred heavy carts driving over cobblestones, then violent to-and-fro shaking of earth and buildings which seemed to last for ages; a pause—and then the slithering crash as walls and roofs, masonry, and brickwork came falling into the streets, followed by the rising of a dense cloud of dust, were phenomena evident to all. Others, such as the opening of crevasses in the ground, the emission of sulphurous gases, and the behaviour of the sea, must be left to the scrutiny of seismologists. The centre of disturbance was probably under the sea to the east of Kingston, as the greatest destruction was wrought nearest this point, the ruin diminishing as one got further inland.

Wooden buildings were but little injured, stone and masonry ones were all more or less destroyed. Two towers (those of the Roman Catholic Church and the Mico College) were thrown bodily down, causing great damage in their fall. The streets were at once blocked by the ruins, and the electric light and power service disorganised. Many of the electric cars caught fire and burned to ashes in the streets where they had been stopped. With great presence of mind the engineers in charge of the works switched off the electric current altogether, otherwise many deaths must have occurred, as "live wires" were lying all about the streets.

Fire broke out a few minutes after the earthquake, and raged

for three days, all the central business part of the town being laid in ashes, while from time to time the great stores of rum (for which Jamaica is so famous) caught fire and blew up with loud explosions. Immediately after the shock the great cloud of dust which arose from the shattered buildings—together with the thick smoke of the conflagration—quite obscured the sun, which was shining brightly, and produced an effect of semi-darkness.

Many people were killed outright and more injured. Cases of compound fracture of one or both thighs and multiple injuries met one on all sides on proceeding into the town. Great efforts had to be made to move these poor people from the path of the advancing flames, and as no skilled assistance or transport were available, their sufferings were terrible. Most of those requiring operative assistance were treated at the Kingston General Hospital, where numerous amputations were performed by the hospital staff, aided by medical officers hastily summoned from their districts.

The Hospital was injured, but not thrown down by the earthquake, which, however, destroyed a large part of its stock of medicines and surgical appliances. Owing to the cutting off of the electric light, darkness soon added to the horror of the scene, and the doctors worked by the light of their buggy lamps among the mass of dead, dying and wounded, lying in the square of the Hospital.

The exact number of people killed by the earthquake will probably never be ascertained, but the total was certainly well over 1,000.

After the disaster the tourists, who were numerous at the time, fled the country by the first available ships. The white inhabitants camped by the ruins of their houses, the coloured folk bivouacked on the old race course and in the Parade Gardens, while many houseless sufferers—both white and coloured—took advantage of the railway to proceed to friends and relations in the country.

The Jamaica State Railway, with great energy, managed to keep communications open throughout, although the line was badly shaken in places, and many of the buildings destroyed. This was a factor of the greatest importance in the situation, as the railway, besides carrying away hundreds who would otherwise have needed relief, brought in immediate supplies of food for the country.

The people on the old race course—a large open space at the top of the City—amounted at one time to 4,000 or 5,000 souls, and formed a serious menace to the health of the community. At first they squatted in groups or families, with such household goods as

they could save in their midst; portable property could not be left for a moment, or it would be stolen. Then arose huts, or "shacks" as they are called, made of palm leaves, broken planks, bits of galvanised iron roofing, and so forth. These huts were crowded together native fashion, for fear of the "duppies," or ghosts of the dead, and built without the least regularity or order. Later, tents were provided, some ranges of wooden huts erected, and order to some extent introduced; but it would have been better had some organisation been insisted on from the first, and the huts been built in some sort of order. Unfortunately, none of the very numerous officials of the Island seemed able or willing to assist the Health Officer in his very thankless task.

Dr. Ogilvie, the Medical Officer of Health, Kingston, on whom the whole administration of this large camp was thrust, in addition to his other work in the city, introduced latrine arrangements, rubbish collecting, and some care of the water supply, as soon as he could, but he was cruelly understaffed, and had but few assistants.

To sum up the history of the Race Course Camp: there was much overcrowding in many of the miserable little huts, and much defective conservancy, owing to the habits of the people, some of whom were quite destitute, while others were mere able-bodied loafers. Yet during these six months that the camp has been in existence, there has been no outbreak of epidemic disease, owing, one may suppose, to the open and wind-swept character of the site, to the persistent fine weather preventing the development of mosquitoes, while the scorching rays of the sun rapidly dried up manure and offal which otherwise would have produced innumerable flies. The present task of the authorities is to clear the Race Course of its temporary inhabitants, as the natives would like to live rent free there for ever, and convert this large public space into an insanitary village.

At Port Royal, which lies at the entrance to the harbour, at the end of the long spit of land known as the "palisades," the natural limestone rock forming the backbone of the place—with the buildings on it—was but little disturbed. All the artificially made soil, however, sank to a greater or less extent, and all buildings upon it were wrecked, and in some cases submerged in the sea.

The water supply of Port Royal—brought eight miles in pipes along the "palisades" from Rockfort—was cut off by the earthquake, many of the pipes being broken, and for some months

both the garrison and the civil population were supplied by water brought across the harbour daily in a "tank boat." There was some difficulty in securing the cleanliness of the tanks in this boat, but there was no outbreak of disease, and the pure sea air, free from dust and foul odours, had a beneficial effect on the health of the troops and such civilians as had the courage to remain there. Mosquitoes (*Stegomyia*) bred largely in the pools of brackish water left among the ruins, and special efforts for their destruction by draining and oiling were successfully made by the medical officers in charge.

The Royal Artillery stationed at Port Royal were moved over to Up Park Camp immediately after the earthquake.

At Up Park Camp, which lies three miles above Kingston, the bulk of the garrison, consisting of the 2nd West India Regiment and its Depôt, were quartered. Here the catastrophe was sudden and tragic to a degree. The roof of the military hospital, a large wooden building raised on piles of masonry, fell in, and the whole place at once caught fire and blazed up with explosive violence. The fire originated in the surgery, in the centre of the building, where drugs and acids were thrown violently to the ground by the shock and spontaneously ignited. The hospital was full of patients at the time, but by the gallant efforts of the orderlies of the Royal Army Medical Corps, the majority were safely extricated from the mass of burning *débris* which marked the site where the hospital had stood a few minutes before. Seventeen people, however, perished at this spot.

From the occurrences at the military and civil hospitals it would seem that three axioms might be deduced:—

(1) When a hospital is dependent on electric light for its illumination, a good store of candles and lanterns should be easily accessible to meet emergencies.

(2) Whenever a hospital is exposed to sudden destruction by earthquake or hurricane, the medicines, which include acids, chlorate of potash, phosphorus, &c., should be stored in a brick building outside of, and quite separate from, the wards.

(3) All wooden hospitals, being liable to fire while containing helpless patients, should have the wards communicating directly with the open air, and should be provided with doors in the middle of the wards as well as at the ends.

Simultaneously with the destruction of the hospital, the barracks and officers' quarters fell into ruins, causing several deaths and many injuries among both officers and men, and the families in the married quarters.

The Garrison Church and other buildings all collapsed, so that in five minutes the whole cantonment was a mass of ruins. As soon as possible the dead were removed, the wounded succoured, and troops sent into Kingston to render assistance and maintain order. By the next day the troops were bivouacked in front of the ruined barracks, and tents had sprung up here and there for married families. A marquee close to the smoking ruins of the hospital constituted the beginning of a field hospital, while a picturesque encampment in the garden of the medical officers' quarters sheltered injured officers, ladies and children.

In this latter camp congestion was for a time very great, but the married families were sent home as soon as possible by the General, and as officers recovered and returned to duty, the camp gradually diminished and was ultimately evacuated without any outbreak of preventable disease.

The sanitary arrangements required at this crisis were fairly obvious. Sites for camps in "Swallowfield"—a large area adjacent to Up Park Camp—were at once selected, brushwood cleared away, tents pitched, and trench latrines dug. As the existing water-carriage system of sewerage was disorganised, trench latrines had to be provided everywhere, and the existing water-closets and latrines cleaned, closed and barricaded. Rubbish pits were dug, and instructions as to burning refuse and boiling drinking water were issued. The large swimming baths were closed, and filled with water to form a reserve in case the ordinary supply failed; but within twenty-four hours the existing standpipes were able to be taken into use again. For a day or so rations of tinned meat and biscuit were issued, but meat was soon brought in from the country. Field ovens were erected, and the ordinary meat, bread and vegetable rations resumed.

The marquee and a few bell tents, pitched near by the hospital ruins to avoid moving some severely injured cases, increased gradually to the dimensions of a complete field hospital, with marquees for all seriously ill patients, and bell tents for the less important and for infectious cases. Later, this hospital camp was superseded by wooden hospital huts (with verandahs back and front), sent out from England ready for erection, each hut accommodating twenty patients. These huts proved airy and commodious, and the annexes to the wards being fitted up locally as operating-room, eye ward, chemical laboratory, and detention ward for mental cases, they formed a good and up-to-date temporary hospital, especially as all the outbuildings of the old hospital were repaired and utilised.

One block was rendered mosquito-proof with wire gauze, and was set apart for European patients, the native soldiers being all malarious from service on the West Coast of Africa. Huts of this pattern, if the verandahs are wide enough, and the roofs constructed with good air spaces and with felt linings to keep out the sun, seem very suitable for tropical requirements, provided they are well raised off the ground with a clear air space underneath. The different blocks should, however, be connected by covered passages to shelter the attendants from sun and rain, and the doors should be made wide enough for a hospital bed to pass through easily. Doors are necessary in the centre as well as at the ends of each block. The construction throughout must be stronger than that for temporary hospitals at home, and the roofs strengthened with strong angle irons to meet storms or hurricanes. Stout, well-seasoned timber must be used throughout, otherwise the wood quickly warps in the humid atmosphere, and also falls a prey to white ants.

The subsequent history of the Swallowfield Camp may be briefly summed up. The camp and all its surroundings were completely cleared of underwood to get rid of mosquitoes. Surface drains were put in order for the same reason. The tents were spread out over a larger area, and overhead shelter provided for kitchens and ablution stands. Rigorous cleanliness was enforced, and a clearance made of old bottles and tins, the accumulation of former years. Much trouble was experienced in getting rid of the slop water from the washing places, as the soil was very little absorbent, but a double set of "sumph" holes used on alternate days proved successful. Tent bottoms were supplied to all tents, and raised off the ground on bricks to allow of a free air space underneath, the tents being struck and the ground well sunned every week. Soon the contractors were at work again, and it became possible to replace the trench latrines by the dry earth and pail system, and to organise the regular removal of rubbish.

Later on the Artillery returned to Port Royal. Temporary barracks were erected for the Engineers, and the West India Regiment removed to a standing camp in the barrack enclosure, where their permanent latrines and wash houses were again available.

In Kingston there was a scarcity of food for the first day or two among the people, but this was soon remedied by the energetic action of the Governor and the Relief Committees, which were quickly organised. A cargo of food stuffs brought by a ship in harbour was at once made available, and supplies were quickly brought in from the surrounding country.

The water supply is derived from the Hope River, passing thence to three sets of sand filter beds which supply different areas, including Kingston proper, its suburbs and Up Park Camp. The Hope River is exposed to very serious pollution at Gordon Town, just above the intake, but the filtration appears to be fairly efficient in ordinary circumstances, and is controlled by monthly bacterial examinations, carried out in the Government Laboratory at Hope by the Island chemist. The water mains were broken in many places by the earthquake, and at first a water famine seemed imminent. This, with the prevailing heat and dust, would have added enormously to the sufferings of the people, and would probably have been the cause of a typhoid epidemic. The responsible authorities, however, with great energy searched for, and rapidly replaced, the damaged pipes, and in two or three days the water supply was entirely restored. Later it was found that the concrete walls of several of the reservoirs had been badly cracked, and filtration of the water had to be partially suspended during repairs. In each instance, while this was being done, cases of typhoid occurred; and while the Hope Reservoir was under repair, the precaution of boiling all drinking water was taken for the troops in camp, with the result that no cases of enteric occurred among them.

The drainage system which carries the sewage of Kingston and the camp into the sea at Harbour Head was damaged, but its speedy reparation was another factor in the prevention of disease.

The first work in the town after the catastrophe was the extraction of the many dead from the ruins. The bodies were buried in long deep trenches in May Pen Cemetery, and quicklime was freely used, but it soon became necessary, owing to the climate, to cremate them on the spot as they were found.

Later, the pulling down of dangerous walls and buildings and the clearing of the principal streets was put in hand, care being taken to clear the surface drains to prevent any accumulation of stagnant water. The atmosphere of the streets of Kingston was for a long time full of dust from the ruined buildings, and charged with the odour of burnt bodies, of smouldering wood-work, and the stench of decomposition. In this atmosphere the troops and police were engaged in laborious fatigue and picket duties, yet at first there was little or no sickness either among the European or native soldiers.

The result of a panic caused by a report that a great tidal wave was expected to overwhelm the city, was the evacuation *en masse* by the coloured inhabitants of the lower part of Kingston.

Many deaths among the civil population and some among the troops resulted from injuries received in the earthquake. As in other hot climates, tetanus is common in Jamaica, and eight deaths occurred from this dreadful disease among the cases in the Civil Hospital, and one in the Military Hospital: this latter was a child whose foot was injured, but which it was hoped would be saved by a conservative operation. Tetanus antitoxin was very kindly supplied by a French warship which was in port at the time, and it was promptly used in this case, but did not avert the fatal result.

Many people, especially those who had been hurt or imprisoned by falling timbers, seemed to be dazed or distraught. On the other hand, cases were recorded where neurasthenic patients, bed-ridden for years, had, owing to the sudden shock, regained the use of their limbs and been apparently restored to health.

About four weeks after the earthquake, cases of diarrhœa began to appear among the troops. These cases were numerous but not serious, yielding quickly to treatment after a few days in hospital. Many were of dysenteric type, with marked tenesmus and melæna. Among the civil population the disease assumed the form of an acute colitis, and was much more serious, the cases being numerous and many of them fatal. This difference was probably due to the better hygienic conditions in which the troops lived, and their better food. The cause of the outbreak was variously attributed to water, dust, and exposure. Probably several agencies were at work, including unsuitable food, fatigue, and camping out on the race course. This outbreak was followed by one of tonsillitis and sore throat, due undoubtedly to inhalation of septic dust. The cases presented an acute inflammation of the pharynx and tonsils, which generally subsided in a few days with appropriate treatment.

Lately there have been cases of enteric fever at Hope, followed by cases in the town of Kingston. These have occurred while the reservoirs at Cavaliers, which supply the Kingston water, have been under repair, and filtration in consequence more or less suspended. There have been no cases among the troops.

After-shocks of varied degrees of severity have been frequent since the earthquake, but have done no material damage. They have had, however, a very depressing effect upon the sick, and on one occasion caused a serious panic, in which several soldiers were injured. The earthquake was felt all over the Island, but damage was practically confined to Kingston and its suburbs, and to Spanish Town. At the hill station of Newcastle chimneys and stone walls were overthrown, and great cracks appeared in the

hill sides, which will probably lead to landslides after the rains. The earthquake has been succeeded by a severe drought in most parts of the Island, causing very widespread distress. It does not, however, seem probable that there is any connection between the two phenomena.

The great loss in money, property of all sorts, and in trade, which Kingston has suffered as a result of the disaster, has not been touched upon here, but it has doubtless been one of the causes of the increased death-rate among the civil population. The destruction was chiefly among the white inhabitants and their shops, offices and houses. The black folk suffered little, and beasts, birds and trees not at all.

A great opportunity lies open in the rebuilding of Kingston to produce a healthy tropical city, with wide streets and open spaces, and to free it from the sweltering masses of crowded native tenements which have heretofore disfigured it. Let us hope that under the present enlightened Governor full advantage may be taken of this opportunity.

In Up Park Camp, which is to be reduced in size, consequent on the reduction of the garrison, it is understood that single storied wooden huts of bungalow pattern are to take the place of the old double-storied barracks of brick and stone, and that a new hospital will ultimately be built on a fresh site more remote from the barracks in Swallowfield, where, also, bungalows for officers and married quarters for European troops are to be erected.

Clinical and other Notes.

THE SOLUTION OF "A CASE FOR DIAGNOSIS."

BY CAPTAIN L. BOUSFIELD.

Royal Army Medical Corps.

THE case reported in the last number of this journal (p. 282) caused great anxiety on account of it presenting the typical appearance of a malignant pustule, and if this had been the right diagnosis, operation should have been performed as soon as possible, since there would have been no time to procure serum. Although the condition appeared to be a malignant pustule, it was not treated as such, from the fact that no bacilli were found in the fluid from the vesicles, that neither she nor any of her family had run any apparent chance of infection with the anthrax bacillus, and further, there were, as far as one could ascertain, no other cases in Malta at that time.

Suddenly the idea dawned on me that the case might have been caused by auto-vaccination, and on enquiry she stated one of her children had been vaccinated two weeks previously and had "taken beautifully." Though the condition resembled none that I have seen on the arm, yet this was quite a satisfactory explanation, and proved to be the correct diagnosis, for she rapidly recovered and was left with a permanent mottled white mark on her chin.

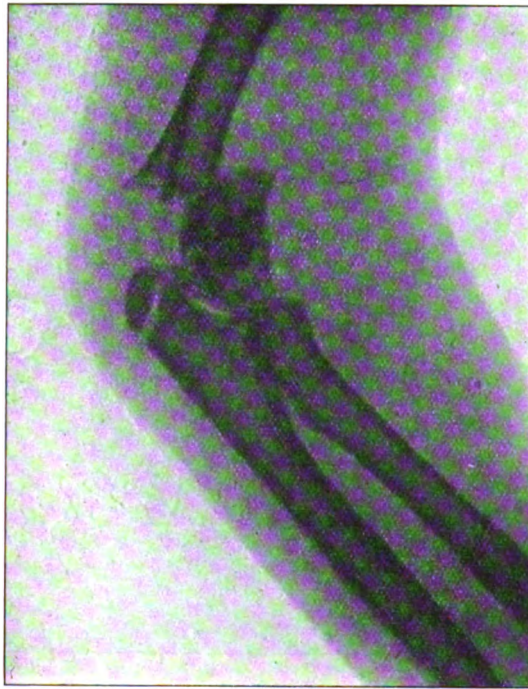
This case is instructive in showing how one question may be the means of settling the diagnosis in a difficult case. The patient's statement that her children were perfectly healthy, followed by my seeing them in that condition, caused me to omit this all-important question, which would have saved great worry and anxiety, not only to myself, but also to the husband and to the patient, whom I had felt bound to inform that the case might be very serious. I am ashamed to say that my omission of this question went within an ace of causing the patient the loss of a large portion of her face.

Curiously, the very next issue of the *British Medical Journal* contained a description of such a case, with a photograph showing the vaccination in identically the same position.

CASE OF FRACTURE OF THE LOWER END OF HUMERUS,
WITH RARE FORM OF DISPLACEMENT.

By CAPTAIN E. W. BLISS.
Royal Army Medical Corps.

Boy S., son of a quartermaster-sergeant in the Royal Army Medical Corps, was first seen by me some seven or eight days after sustaining an injury in the region of his left elbow-joint. His statement was that on February 26 he fell off the parallel bars in the gymnasium, and as far as



Skiagram of arm before operation.

he knew he fell with his left forearm bent up, and on to his elbow; but he is not very clear as to what happened. He further stated that he could not move his elbow to any extent immediately after the accident, and that he was in great pain.

When first seen by one of my colleagues there was much swelling about the joint, and only a very slight movement could be obtained.

No abnormality of the relative positions of the bony points about the elbow-joint could be made out. There was about three-quarters of an inch shortening in the upper arm, measured from the internal condyle to the acromion process. On gentle rotation of the forearm a soft crepitus could be made out. Circulation in the limb not interfered with.

Owing to there being no X-rays apparatus in the hospital, arrangements had to be made for taking a picture outside, thus occasioning some



Skiagram of arm six weeks after operation.

delay in determining the actual condition of the parts. The skiagram shows a fracture of the humerus a little above the condyle, and the rare form of displacement of the upper end of the lower fragment, viz., forwards instead of backwards.

In view of the probable large amount of impairment of flexion that would be likely to result, as the ends of the bones could not be kept in a good position, it was decided to wire the fragments, and the boy was consequently taken into hospital here for that purpose.

On March 7, under A.C.E., administered by Lieutenant J. J. O'Keeffe, R.A.M.C., and assisted by Major R. J. Copeland, R.A.M.C., I made an incision about 5 inches long over the back of the arm extending downwards nearly to the olecranon process. The triceps muscle was divided longitudinally and retracted, and the ends of the bone exposed. A good deal of blood clot was found at the seat of fracture; this was cleared away, and the lower end of the upper fragment was found to considerably overlap the upper end of the lower one. The ends of the bone were got into position, but great difficulty, owing to the shortness of the lower fragment and its tendency to tilt forward, was experienced in keeping them so. Holes were then drilled through the outer side of the upper and lower fragments, and a silver wire passed with some trouble. The wire being partly tightened up, and the ends of the bone brought near together, two other holes were drilled on the inner side of the upper and lower fragments and a second wire passed. Both wires were then tightened up, twisted, and the ends having been cut off, the points were hammered down. The triceps muscle was drawn together with a few catgut sutures, the superficial wounds closed with fishing-gut sutures, and the arm dressed and put up on inside and outside right-angle poroplastic felt splints.

On the eleventh day dressings and sutures were removed, primary union was found to have taken place, and slight passive movement was commenced. From this time onward the movements were increased daily, and massage of the muscles carried out. The boy was discharged to attend on the twentieth day. Six weeks after the operation a second skiagram was very kindly taken for me by Staff-Surgeon Hopkins, Royal Navy. This showed the ends of the bone to be in good position, but some callus on the anterior aspect which prevented perfect flexion. This appears to be gradually becoming absorbed, as flexion is steadily improving, and the boy can now, two months after the operation, play the violin and carry out any other ordinary movements he wishes to.

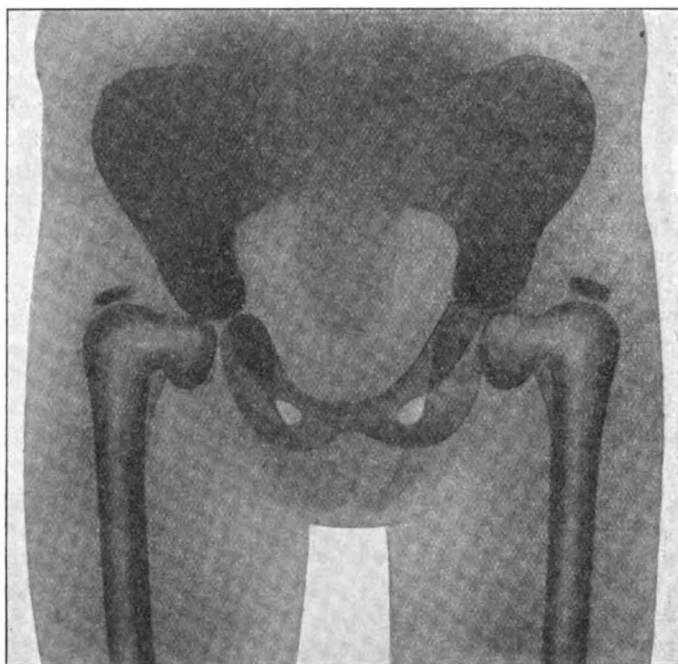
My reasons for publishing the case are: (a) That it is the rare form of displacement, viz., the upper end of the lower fragment forwards instead of backwards, and (b) that it well shows the necessity for wiring if a good result is desired in fractures occurring in this region. My own opinion is that had the case been treated simply with splints, the boy would certainly never have been able to play the violin again, and would probably have had marked impairment of movement for many other ordinary movements.

CASE OF DOUBLE COXA VARA.

By MAJOR S. H. FAIRRIE.

Royal Army Medical Corps.

THE above condition was observed in the son of a sergeant of a regiment stationed at Shorncliffe. The boy, aged 9, was delicate-looking and anæmic, much smaller than he should have been for his age. His mother states he was a strong, healthy child until the age of four, when he had an attack of pneumonia, after which he was always ailing. The present complaint commenced four years ago. The boy walked with a waddling gait. Examination revealed that the movements of the hip-



Drawing reduced by half from an X-ray photograph of Double Coxa Vara.

joint were free except in abduction, which latter was very limited; there was some permanent flexion of both hip-joints; no tenderness on movement or pressure over these joints; both the great trochanters appeared high and abnormally near the crests of the ilium; the left leg was half an inch shorter than the right. A radiograph disclosed the condition of double coxa vara. The photograph shows well the bending of the necks of the femur, as it also shows the partial dislocation of the head of the bone from out the acetabulum, which is a consequence of all advanced conditions of this disease.

A CASE OF ECLAMPSIA.

By MAJOR R. J. BLACKHAM.

Royal Army Medical Corps.

CASES of eclampsia are so rare in military practice that the following seems worthy of record.

Mrs. R., wife of a sergeant in the Royal Garrison Artillery, was sent into the Military Families' Hospital, Devonport, at 4 p.m. on December 7th, 1906. She had been seen during the afternoon by Lieutenant-Colonel Dundon, R.A.M.C., Medical Officer in charge of Troops at Plymouth Citadel, who directed her relatives to bring her to hospital without delay. On arrival there the patient, who was in the seventh month of pregnancy, was found to be very seriously ill. She was in the condition described as the *status eclampticus*, in which the subject passes rapidly from one severe convulsive seizure to another without any return of consciousness. She was placed under chloroform to control the eclamptic attacks, and her urine was drawn off with a catheter. It was found to become almost solid on heating. The os uteri was not dilated at all. After consultation it was decided to empty the uterus as recommended by the International Congress at Geneva, 1896, and the operation of *accouchement forcé* was accordingly undertaken. The cervix was dilated by means of Hegar's dilators, and the manual method of Harris and version having been performed, the fœtus was rapidly extracted, which was asphyxiated. The uterus contracted down fairly well, and the placenta was removed without trouble. Ergotinine citrate, $\frac{1}{10}$ grain, was injected hypodermically. The patient recovered from the anæsthetic without any untoward symptoms, but did not regain complete consciousness for nearly forty-eight hours. The infant was induced to breathe, after prolonged efforts, and lived for seventy-two hours. After the evacuation of the uterus the patient had no return of convulsions and made an uninterrupted recovery. The urine two days after the operation was one-fifth albumen, but when Mrs. R. was discharged from hospital on December 27th, 1906, there was merely a definite haze on heating, while on examination a month later the urine was found to be quite free from albumen.

The teaching of Charpentier of France, and Winckel of Germany, is that "the eclamptic uterus should not be disturbed till after the os is fully dilated, since the irritation on inducing labour or artificially dilating the cervix brings on convulsive seizures." If the continental procedure had been adopted in this case, there does not appear to be any doubt that the woman would have died, as she had passed into a very severe stage of eclampsia before the onset of labour or the slightest dilation of the os uteri.

CARBOLIC ACID GANGRENE.

BY CAPTAIN W. A. WARD.

Royal Army Medical Corps.

IN the *British Medical Journal* for May, 1907, Mr. David Wallace calls attention to the possibility of gangrene following the use of carbolic acid as a dressing, and reports nine cases which have come under his direct observation, and also gives references to other reported cases, in all a total of 193 cases.

It is certainly not a common accident, considering how much carbolic acid is used, though it is quite possible, as Mr. Wallace says, that some cases may have been attributed to some cause other than carbolic, which, in a case of gangrene, one would little suspect as the cause. Indeed, it is difficult to account for it happening at all, except as an idiosyncrasy, or when used in very strong solutions, but that it is a very real and dangerous complication there can be no doubt, and sufficient to justify one in substituting something which is free from this risk.

The practical point is that the risk is the same when it is used in very dilute solutions, and as there is very little reference to it in recent surgical works, and as a case occurred a short time ago in the Military Hospital, Rochester Row, London, for which no other cause could be found, I am induced to call attention to it in the *Journal*, not only as a warning, but it may be the means of other cases being reported, and so give an indication as to how far this complication occurs in the Service, where carbolic acid is pretty freely used. The history of the case above referred to is not without considerable interest.

Private M. G. was admitted to hospital February 14th, 1907, suffering from gonorrhœa. He had been in hospital one month when a small soft sore was noticed inside the prepuce; this gradually became indurated and hard, but there was nothing unusual in its appearance.

On March 4th, 1907, some slight œdema of the prepuce was noticed, and an ordinary carbolic and lead lotion was applied on lint.

The following day the condition had markedly changed, and patient complained of feeling very ill, with nausea, headache, diarrhœa. Temperature 104·6° F.; pulse 120. On examining the penis it was seen to be very œdematous and tense, and on the under surface, at the junction of penis and scrotum, there was a small dark area the size of a threepenny piece, from which dark sanious matter was exuding. From this, extending forwards towards the end of penis, was a thin dark line, and the under-part of the penis had all the appearances of commencing gangrene. In the course of a few hours the condition had become much more marked, and the patient's general condition was critical. The temperature had remained about 105° F. in spite of antipyretic treatment, and there was

now a distinct area of gangrene on the under-surface of the penis, triangular in shape, the apex pointing towards the end of the penis.

By the following day the gangrenous area had extended on to the sides of the penis and backwards on to the scrotum, but at the sides there was an attempt at demarcation. The general condition was a very critical one and required liberal stimulation, &c. Specimens of his blood were sent to the Royal Army Medical College for examination, but the result was negative.

The one favourable symptom was that from the beginning his mental condition had remained quite clear and there had been no rigors. As a precautionary measure 10 cc. anti-streptococcus serum were injected on April 5th, 1907, and repeated three times; the temperature then began to fall, and on April 9th, 1907, there being a distinct line of demarcation [and the gangrenous area showing signs of separation, the patient was put under chloroform and the whole of the gangrenous mass scraped away.

Healthy granulations soon appeared, and as soon as the granulations were ready, skin grafts were planted, most of which grew, and the patient made a good and rapid recovery. A month later he developed a typical secondary rash.

SURGERY IN AN INDIAN CANTONMENT GENERAL HOSPITAL.

By MAJOR W. HALLARAN.

Royal Army Medical Corps.

WHEN some time ago I left Aldershot and was ordered for a tour of foreign service in the Punjab, it was with feelings of great regret I bade good-bye to the Connaught Hospital, where during the time I had been stationed there I had had many interesting surgical cases to attend to, and I supposed, remembering a former tour of service in Southern India, that any interesting surgical cases would be few and far between in the military hospitals out there.

After serving some months in Mooltan, I was ordered to Ferozepore, and in addition to my other duties, was appointed to the charge of the Cantonment General Hospital in that station. These hospitals in India are for the treatment of the sick poor in the sudder bazaars and cantonments, and are also for the treatment of venereal diseases. After doing duty for a short time, I found that many interesting surgical cases were attending for treatment, and that I would have to perform several operations on patients who begged to be operated on. Before undertaking any operation, I fitted up an operating room as well as I could out of cantonment funds apportioned for use of the hospital. This room was very unpretentious to look at, and would cause many a great London surgeon,

who spends his professional life in sterilised and aseptic operating theatres, to hold up his hands in horror; but still this little room did good work, and its aseptic results would compare favourably with many a more ambitious operating room in England. Sterilisers, which admirably carried out their work, I had made by a native workman, who was most intelligent, and he made several surgical instruments which I required in really first-class style, after seeing pictures of them in a surgical instrument catalogue, for which he charged a ridiculously small price. I found it a hard job teaching the hospital assistant and the attendant coolies, on whom I had to rely for help, the principles of aseptic surgery, but I found them most willing to learn and they improved rapidly.

In recording the following operations which I performed at the hospital, Mr. Jacobson's name will be seen frequently mentioned; this is because his work on Operative Surgery has accompanied me to the various foreign stations I have had to serve in, and is the work I consult, and a well-trying and true friend I have found it to be. Now, briefly related are some of my operations:—

Removal of a Dermoid Cyst.—H., a native child, aged 6, with a very large cystic tumour growing at the outer angle of the right orbit, which caused great disfigurement, was brought to me by her father, who asked me to remove the growth. I removed the tumour the day after admission to hospital, using sterilised dressings and horse-hair sutures. On removing the dressings after eight days I found the wound perfectly healed. The growth was a dermoid cyst.

Single Hare-lip.—A native child, aged 1, with a single hare-lip, was brought to have the deformity rectified. After chloroform had been administered I performed the usual operation, having to free the lips and alæ greatly to avoid tension. I had also to fracture back the right maxillary bone, which was projecting a good deal beyond its fellow, into its place. I used the sutures and dressings recommended by Mr. Jacobson. The child left hospital quite recovered on the twelfth day after the operation.

Radical Cure of Varicocele.—I performed this operation on a young man suffering from varicocele. The operation I made use of was the high one, and I carried it out in all its minutiae as advised to do so in Mr. Jacobson's Surgery. The result has been excellent. I found the wound perfectly healed when I removed my dressings and stitches on the eighth day.

Removal of a Large Lipomatous Tumour.—This operation was performed on a very old woman, from whose right arm, on its lower and outer aspect, the tumour was growing. The growth equalled in size a large orange. Much redundant skin required removal. The old lady made an excellent recovery from the operation.

Radical Cure of Hydrocele.—I performed this operation on an old man who had been frequently tapped. All stages of the operation, both as regards preparing the patient, performing the operation, and the dress-

ings made use of, were carried out as recommended by Mr. Jacobson. My patient made an uninterrupted recovery.

Excision of Elbow-joint.—S. F., a boy, aged 14, was brought to me with very extensive and long-standing disease of his right elbow-joint. Keeping him under observation for some days I found he had much fever of a severe hectic type. In excising his elbow-joint I made use of the vertical incision and carried out all other stages of the operation as recommended by the surgeon whose name I have already frequently quoted, both as regards caring for the ulnar nerve, the amount of bone to be removed, &c. The patient is progressing most favourably and has not had a rise of temperature since the operation.

In addition to the above operations I enucleated an eye, extracted a cataract, removed polypoid growths from the nose, and removed enlarged glands from the groin. Several other cases were awaiting operation.

The above will show that a good opportunity for practising surgery is open to the officers of the Royal Army Medical Corps in charge of General Cantonment Hospitals in India.

REPORT ON THE USE OF WHEY IN ENTERIC FEVER.

BY LIEUTENANT-COLONEL L. W. SWABEY.

Royal Army Medical Corps.

My attention was first drawn to the use of whey in enteric fever by reading a lecture by Dr. William Ewart, entitled "On the Principles of Treatment of Typhoid Fever," delivered at St. George's Hospital on October 8th, 1905, and published in the *British Medical Journal* of December 9th, 1905. I will only quote the following passage from the valuable lecture of St. George's senior physician, which made a deep impression on me, and led me to adopt and also to advise the adoption of whey in the feeding of enteric patients in the Station Hospital, Sitapur. After discussing the starvation plan, and the mixed solid food plan, Dr. Ewart goes on to speak of milk as follows:—

"Exclusive milk diet, that *medio tutissimum*, is not, after all, a middle course of absolute safety. Nay, in the evil stage of the worst cases, milk is a danger so great that we should take warning against its use in any of them." He goes on to state that the danger had been clearly perceived by some of our great authorities, notably Sir William Jenner and Dr. Burney Yeo. Dr. Ewart says: "The point is that when digestion is paralysed, whilst even whey will leave minute flaky residue in the intestine, pure milk loads it with massive curds, which breed intestinal putrefaction, and ultimately favour the intra-gastric fermentation of the fresh milk supplies. Each feed will aggravate the tympanites when the putrefactive process has once gained the upper hand." I have placed in

italics some parts of the above quotation, as it seems to me their importance cannot be over-estimated, and that they constitute a most powerful indictment of the use of milk in enteric by a highly competent critic. One can readily imagine the deleterious effect certain to be produced by "massive curds" riding roughshod over the inflamed and ulcerated surface of the much-tried small intestine.

For the medicinal treatment pursued by Dr. Ewart please see his lecture. It was only in part adopted here, his routine administration of small doses of castor oil being used in many cases. Of intestinal antiseptics there is, of course, a large choice. Carbolic acid was the one used in this epidemic, and seems to answer very well. I do not wish to advocate any special line of medicinal treatment, but to insist strongly on the value of whey in its dietetic treatment. Shortly after reading Dr. Ewart's article I was furnished with a copy of the *Lancet* of November 2nd, 1901, containing an article by Mr. Prideaux Selby, M.R.C.S., L.R.C.P.Lond., in which he strongly advocates the whey diet. He treated seventy-five cases of enteric fever with whey only at the Beacon Hill Fever Hospital of the Faversham District Union, with *only two deaths*.

The following table given by Mr. Selby is of value :—

THE RESULTS OF A COMPARATIVE ANALYSIS OF WHEY AND COW'S MILK EXPRESSED IN PERCENTAGES.

	Whey	Milk
Total solids	7.4	12.43
Lactose	4.9	4.9
Fat	1.2	3.4
Albuminoids	0.8	3.3
Mineral matters	0.49	0.73

The reduced albuminoids, total solids and fats in whey are very striking. Mr. Selby strongly condemns the use of milk on much the same grounds as Dr. Ewart.

During the month of January, 1905, fifteen cases of enteric fever were admitted to the Station Hospital, Sitapur, all of whom were treated with whey until fifteen days after the temperature reached the normal. All of these cases did extremely well, and in no case was there any great emaciation. In the worst cases the mouth and tongue cleared rapidly. One man in particular, a very severe case, was admitted with sores on the tongue and delirium the first night. The sores and delirium rapidly disappeared, and although it was a long and severe battle, he eventually recovered. The pulse-rate notably diminished, tympanites was kept well under, and there were none of the usual complications, such as hæmorrhage, phlegmasia, &c. The bright and hopeful expression of the sufferers was particularly striking, they gave little trouble, and were most amen-

able. In mild cases whey seems to shorten the disease. Only six of these cases gave a positive reaction with Widal's test, but the blood was examined in every case, and the clinical diagnosis was arrived at in those cases which gave negative results for the following reasons: (1) That some very mild cases, as shown by the temperature chart, gave a positive reaction; (2) that some severe and typical cases with spots gave a negative result; (3) that negative cases which had remained normal for some days had typical relapses. (Two cases.)

Whey is also indicated in para-typhoid and in all fevers with intestinal disturbance.

Preparation of Whey.—To each quart of new milk stir in two teaspoonfuls of rennet. Put it into a pan and warm slowly till it curdles. This takes about twenty minutes. Break up the curd and strain the whole through fine muslin. The curd is thus separated from the whey.

About five pints of whey were daily given.

During over a quarter of a century's service I have treated many enteric fever patients in the course of epidemics in India, Malta, Crete and Egypt, and have never been satisfied with milk, but looked in vain for a substitute. I think in whey at last has been found a rational and efficient diet, and as far as I am aware, it has not been given anything like an extended trial in India, or by Army medical officers generally. I would earnestly appeal to them to do so now, if they think the testimony I have produced to be sufficient. I may add here, as additional evidence in its favour, that whey has been used in all severe cases of enteric fever in Cork Street Fever Hospital, Dublin, for many years, with a death-rate of only about 7·5 per cent. In the Sitapur cases *all* recovered.

I think all the evidence I have produced tends to show that milk is too heavy, and that the *discontinuance* of its use is *strongly indicated*. Whey, whilst appearing to be perfectly sufficient to maintain nutrition, does not irritate the inflamed intestine.

Personally I have been so struck with Drs. Ewart's and Selby's condemnation of milk, that I would never willingly administer it in anything like a severe case.

REPORT OF A GROUP OF CASES OF ENTERIC FEVER WHICH
OCCURRED AMONG THE CHILDREN OF FAMILIES OC-
CUPYING THE NEW VERDALA MARRIED QUARTERS,
MALTA.

By MAJOR W. L. GRAY.
Royal Army Medical Corps.

A GROUP of cases of enteric fever having occurred among the children of families occupying the New Verdala Married Quarters, Malta, a special investigation was made to discover, if possible, the cause. On p. 407 is given a table of the cases, and the column of remarks shows the information I have been able to obtain.

The common factor with all these children is contact, as they all played together on the ground in front of the married blocks.

The first child attacked was boy S., and almost simultaneously girl S. The mother states that prior to their illness there had been heavy rain, which filled the surface gutters. These gutters intersect the ground in front of the married quarters, and a block of the drain had occurred making a small pond. In this the children played, and their mother believes that the boy drank some of the water. As this water contained the washings from the road and surrounding ground it must have been very foul.

The K. children took ill the beginning of June and were admitted to hospital June 21st, 1906. They played with the S. children. Girl K. was discharged hospital July 15th, 1906, and boy K. August 5th, 1906, both returning home.

Girl B. was employed in attending boy K. in his quarters from the middle of August, and took ill herself on September 8th, 1906. During this time boy K. was suffering from a nasal discharge for which he was re-admitted to hospital on September 29th, 1906, and subsequently died. Girl B. is still under treatment in quarters. She states that she had taken neither food nor drink in the K.'s house; she lived and slept at home, in a different block (St. Nicholas Married Quarters, 200 yards away).

Boy R. S. took ill on September 13th, 1906, and was admitted to hospital on September 20th, 1906.

Boy A. S. took ill on September 21st, 1906, and was admitted to hospital on September 24th, 1906. Both these children played with K.'s children.

Girl P. took ill on September 20th, 1906, and was admitted to hospital on September 30th, 1906. She was also a playmate of the K.'s.

It will be seen that here we have a group of contacts all traceable to the same block, and all associated intimately, either by play or nursing, with each other; girl B., although not actually living in the block, attended boy K., who was convalescent. Before accepting the contact theory it is necessary to examine all other possible causes and see if any other reason can be assigned.

Latrine infection is improbable; each quarter has its own water-closet, and each water-closet is likely to be only used by the members of the family occupying the quarter. No adults of the families from which the children were seized were affected.

Milk supply is open to suspicion as some got milk from itinerant vendors, others used tinned milk only, while others again obtained it from the former hospital contractor, Chircop. Chircop's premises are very insanitary, there is no water laid on, all the water supply available being from a tank which is filled by surface water from the road. He states his tins are scrubbed and scalded with hot water and soda. All

TABLE OF ENTERIC FEVER CASES, VERDALA MARRIED QUARTERS, MALTA, 1906.

	Age	Name	Corps	Quarters	DATE OF			Remarks
					Onset	Admission to hospital	Discharge from hospital	
Children of Sergt.-Major Instructor S. (Gymnastic Staff)	6	Boy S. . .	Gymnastic Staff	No. 12, Married Quarters, Verdala Barracks	10.5.06	25.5.06	8.7.06	Serum : reacts to enteric fever. Milk : from itinerant goat-man ; stated to be boiled ; tinned milk used since May, 1906. School : St. John's and St. Paul's.
	5	Girl S. . .	Gymnastic Staff	No. 12, Married Quarters, Verdala Barracks	14.5.06	25.5.06	8.7.06	Serum : reacts to enteric fever. Milk : as above. School : attends both St. John's and St. Paul's and Margherita Schools.
Children of Colour-Sergeant K. (4th Worcester Regt.)	4	Girl K. . .	4th Worcester Regiment	No. 6, Married Quarters, Verdala Barracks	Early in June	21.6.06	15.7.06	Serum : reacts to enteric fever. Milk : from itinerant goat-man ; later from Chircop ; stated to be boiled. School : attending St. John's and St. Paul's two months previous to illness.
	2	Boy K. . .	4th Worcester Regiment	No. 6, Married Quarters, Verdala Barracks	17.6.06	21.6.06	5.8.06	Serum : reacts to enteric fever ; also to Mediterranean fever (incomplete). Milk : as above. School : does not attend.
Daughter of Accountant B., A.S. Corps	13 $\frac{9}{12}$	Girl B. . .	A.S. Corps	No. 16, Married Quarters, St. Nicholas	8.9.06	*	*	Serum : reacts to enteric fever. Milk : from itinerant goat-man ; stated to be boiled. School : attends Margherita School.
Children of Sergt.-S., R.A.M.C.	11 $\frac{9}{12}$	Boy R. S.	R.A.M.C.	No. 20, Married Quarters, Verdala Barracks	13.9.06	20.9.06	21.10.06	Serum : reacts to enteric fever. Milk : from Chircop ; stated to be boiled. School : does not attend.
	4 $\frac{7}{12}$	Boy A. S.	R.A.M.C.	No. 20, Married Quarters, Verdala Barracks	20.9.06	24.9.06	29.10.06	Serum : reacts to enteric fever. Milk : as above. School : attends St. John's and St. Paul's.
Child of Sergt. P., 4th Worcester Regiment	4 $\frac{1}{12}$	Girl P. . .	4th Worcester Regiment	No. 18, Married Quarters, Verdala Barracks	22.9.06	30.9.06	8.11.06	Serum : reacts to enteric fever. Milk : tinned milk only used since arrival in Malta. School : attends St. John's and St. Paul's.

All these children played together. Milk supply from different sources and stated to be boiled. Water supply excellent and in use in the whole district. No other cases have occurred among the children attending the above-named schools.

* Was placed on the sick list on September 25th, 1906, and treated in quarters ; recovered, and taken off the sick list November 2nd, 1906.

the families declared that they boiled their milk. In any case the milk supply to the infected families came from many sources. The P. family have never used any other milk than tinned since their arrival in the Island.

Water supply, laid on in pipes to each quarter, is of very good quality and drunk by troops and all others in the district. It is above suspicion.

School infection is improbable as many of the infected children did not attend any school.

Sanitary Defects.—Smell has frequently been complained of coming from the gratings covering the traps for slop-water. These are just below the back windows of the ground-floor quarters, and such smell would only be a nuisance to the occupants of the ground-floor quarters. This is ruled out as a probable cause by the fact that the P., K., R. S., and A. S. families had quarters on the first floor, well away from the trap gratings complained of.

Although in the Army it is the practice to isolate cases of enteric fever, this is not universally so in civil hospitals. In many of the latter, cases of enteric fever are treated side by side with patients suffering from other maladies. This implies that the risk of enteric fever spreading in such wards is considered practically non-existent. On the other hand, among sick attendants who handle bed-clothes, urinals, bed-pans, &c., we have ample evidence that risk of infection from the patients exists, especially among those who are careless about the cleanliness of their hands. Among children the relations of patient and sick attendant are more nearly approached than with adults, and the risk of enteric fever spreading among them is greater. In their games children come very much in actual contact with each other, and it is conceivable that infected urine from the clothes or hands may be transferred from the sick to the healthy and so spread the disease.

In 1904 the sloping ground in rear of the married quarters was occupied by troops under canvas, where at first the latrine arrangements were very primitive. Some cases of enteric fever occurred amongst them which may at that time have polluted the ground. Since then the ground has been thoroughly washed by frequent storms, alternately with exposure to blazing sunshine, which should have effectually destroyed or removed all traces of the former epidemic.

A group of cases of enteric fever among children of a somewhat parallel nature is reported in the *British Medical Journal* of June 9th, 1906, in which personal contact appears to have been the only common factor.

HÆMORRHAGE INTO THE VITREOUS.

BY CAPTAIN A. J. HULL.

Royal Army Medical Corps.

THIS subject is not without interest to the military surgeon, from the fact that hæmorrhage into the vitreous is frequently caused by injury, and ophthalmic injuries are of comparative frequency in the Army; also because the mysterious cases of sudden blindness which occasionally occur, and are liable to be suspected of malingering, are not infrequently the result of spontaneous hæmorrhage into the vitreous.

Cases of hæmorrhage into the vitreous body may be divided into two classes: those depending upon retinal hæmorrhages, and those depending upon ciliary hæmorrhages. All ciliary hæmorrhages may be said to arise from vessels situated anterior to the ora serrata; hæmorrhage from the posterior ciliary vessels, being nearly always sub-retinal, is not hæmorrhage into the vitreous body. The retinal hæmorrhages, with the exception of those occurring in high myopia, are usually less severe than the ciliary cases; the blood in these cases usually detaches the hyaloid membrane from the retina, and lies between these structures. The ciliary hæmorrhages, on the contrary, are usually severe, the blood bursting through the hyaloid into the substance of the vitreous.

The principal causes of hæmorrhages into the vitreous are the following: traumatism, choroiditis, retinitis, myopia of high degree, atheroma, general diseases, such as diabetes, Bright's disease and anæmia, and glaucoma. The most important cases are those in which the hæmorrhage is traumatic in origin. In these cases we are usually dealing with young patients with otherwise sound eyes, patients to whom the restoration of sight is of overwhelming importance. On the other hand, in the case of hæmorrhage due to general diseases, we are dealing with older patients whose sight is probably seriously impaired. The hæmorrhage in traumatic cases may be either retinal or ciliary; it is usually ciliary. In the majority of cases of myopic hæmorrhage the hæmorrhage is retinal. In general diseases and also in glaucoma the hæmorrhage is usually ciliary in origin. Repeated hæmorrhages sometimes occur in young men in connection with epistaxis.

Symptoms.—In the case of small sub-hyaloid hæmorrhages, upon ophthalmoscopic examination, small, boat-shaped hæmorrhages may be seen in the fundus. Small hæmorrhages into the vitreous body may produce either a red cloud in fluid vitreous, or a black mass when the vitreous body is of the normal consistence. If the hæmorrhage is large there will be a loss of fundus reflex.

Diagnosis.—Small hæmorrhages are usually easily recognised with the ophthalmoscope. In the case of large hæmorrhages, the sudden onset, combined with the absence of fundus reflex, makes the diagnosis easy

in the majority of cases. Cases are occasionally sent to surgeons for operation under the impression that they are cases of cataract. In cases of extensive hæmorrhages, the appearance of the eye under ophthalmoscopic examination is very like looking at an unilluminated pupil, so that unless the observer meets with one of those exceedingly rare curiosities, a black cataract, a mistake is unlikely to occur. He may satisfy himself that the opacity is not in the lens, if he chooses to, by means of the posterior lenticular reflex image.

Treatment.—The immediate treatment is to prevent the continuance of the hæmorrhage. This is effected by rest, the application of ice to the eye, and the instillation of adrenalin. A convenient way of administering the adrenalin is by means of tabloids of hemisine. After the administration of adrenalin there is frequently a severe reaction. Several surgeons have recorded cases of annoying hæmorrhage into the anterior chamber following iridectomy and other operations performed under adrenalin and cocaine. When using adrenalin this danger may be obviated by continuing the instillation of adrenalin after the operation in decreasing doses, so that the last instillations contain only a trace; by this method the reaction will be avoided. The after-treatment of hæmorrhage into the vitreous consists in assisting the absorption of the blood. This is usually effected by rest, the application of weak solutions of atropine locally, and the administration of potassium internally. In intractable cases, the use of such powerful remedies as the subconjunctival injection of cyanide of mercury, massage, or the instillation of dionine, may be required. Although the instillation of atropine is usually practised, it is of doubtful value, and it would be more scientific to reserve its use for those cases in which the formation of posterior synechia is feared. Since the blood which is not absorbed by the fluid vitreous is removed by the leucocytes which leave the eye through the lymph spaces, the action of dionine is particularly well marked in these cases.

NOTES ON THE CAUSES AND TREATMENT OF COLLAPSE IN MALIGNANT AGUE.

BY CAPTAIN G. E. CATHCART.

Royal Army Medical Corps.

SOME time ago several cases of malignant ague came under my charge. These cases varied in type considerably, and I have been requested to write these notes on the condition of collapse attending many of them, together with the treatment of the condition as carried out at the Station Hospital, Rawal Pindi. This complete collapse was a marked feature of the worst cases, and seemed a special feature of the so-called "Peshawar

fever," though it sometimes attended the diaphoresis of other hyperpyrexial types.

These patients were admitted with either vomiting or diarrhœa or both; many presenting to all intents the clinical picture of cholera. Large quantities of blood-stained fluid were ejected from an "empty" stomach, or a profuse dysenteric diarrhœa obtained. Collapse soon followed this condition with varying intensity, some cases requiring no more than a medium dose of morphia and external warmth to restore them; in others the collapse was complete, the patient becoming rapidly almost pulseless, with stone-cold extremities, bathed in clammy sweat, and with sighing respirations.

The proximal cause of this collapse is obvious in many cases, *i.e.*, the abstraction of a large quantity of the watery constituents of the blood by vomiting and diarrhœa. The actual nature and origin of this copious blood-stained vomiting and diarrhœa seem to be a trifle obscure, *i.e.*, whether the blood-staining of the ejecta is due entirely to an actual infarction of the terminal vessels of the stomach and intestinal wall by sporulating parasites? Large numbers of parasites have certainly been found in the villi of the stomach and intestines, according to Stephens and Christopher. On the other hand, it seems probable that, in some cases, the blood-staining element in the ejecta might be due to extensive submucous hæmorrhages, occurring as local manifestations of profound toxæmia, on a par with the occurrence of petechiæ on the body surface. A series of *post mortems*, with stained sections of the stomach and intestines, would clear this point, but up to the date of writing opportunity for these has not occurred.

As regards the actual immediate treatment of this condition, there remains very little new to be said. *In the milder cases*, as said before, a medium dose of morphia ($\frac{1}{4}$ gr. hypodermically), with external warmth in the form of hot-water bottles and blankets, is indicated. This is combined with treatment of the predominating symptoms. *In the dysenteric type*, a starch and opium enema, given with the buttocks well elevated. *If vomiting was copious and persistent*, ice pills were given, and all nourishment stopped by the mouth for twelve hours. In either variety a full dose of quinine (bi-hydrochlorate, grs. x.) was given intramuscularly, and repeated each morning for three successive days. Weekly injections were, as a rule, sufficient after this course. *In the more severe cases* more active treatment had to be employed. In these cases the peripheral circulation (having almost failed) can no longer be trusted as a drug carrier, and on this account hypodermic injections of any kind are likely to prove useless. Venous transfusion of two to three pints of saline fluid is performed, and the quinine solution may either be added to the saline injection, or injected separately by Bacelli's method into the median basilic of the other arm; grs. xv. of the bi-hydrochlorate (intravenous) is a suitable dose for such cases. Under this treatment the pulse as a rule improves

rapidly, but this improvement may be only temporary, and may then be followed in twenty minutes to half an hour by a state of collapse as complete as before. It is safer on this account, therefore, to supplement the venous transfusion by injecting the axilla with a quart of saline, this being more gradually absorbed by the re-established peripheral circulation. This process is too familiar to need more than a word of description. A special trocar and cannula has been devised for the sake of convenience, but an ordinary exploring needle with the transfusion tubing attached answers the purpose admirably. A fold in the anterior axillary wall is picked up, and the needle driven in to the extent of $1\frac{1}{2}$ inches. The transfusion bell-jar can then be fixed to the wall above the patient's bed, and after the injection the needle or cannula may be left *in situ*, should the patient's condition render a second injection of probable necessity. This method has the double advantage of expedition and slow absorption, but is necessarily only of value when the peripheral circulation is sufficiently active to absorb the injecta, and on this account can never altogether replace venous transfusion. It would rather appear that transfusion in these cases performs a dual rôle, in combating the actual collapse, and secondly by diluting the profound toxæmia. A simple and rapid method of performing the operation is to attach fine-calibre tubing to a hypodermic needle, and run the saline fluid directly into the vein without any preliminary dissection. The collapse of the vein wall may render this difficult, but with adequate constriction above the elbow the vein can generally be sufficiently dilated for the purpose.

The future treatment of pernicious ague seems still to be somewhat on its trial, that is, as regards the right duration of quinine treatment, the knotty point to decide being, how far quinine may be used without increasing the anæmia, and secondly, how soon quinine may be abandoned without risk of a relapse. The path between these seems narrow, as, though quinine does not directly produce anæmia, it does so indirectly, by lowering the oxygen affinity of the red cells. The general consensus of opinion seems to be that after three daily injections, a course of weekly injections for six weeks to two months is sufficient.

In treating the resulting cachexia of these cases, we gave red bone-marrow a trial, with very good results, and from blood-counts performed at Netley on such cases, a more rapid response was found to this blood-former than to any iron preparation. If the marrow "tablets" prepared by Messrs. Burroughs, Wellcome and Co. are not available, they can be replaced by the raw marrow, which, made into sandwiches and treated with condiments, is not unpalatable.

A SIMPLE FORM OF DESTRUCTOR FOR STABLE LITTER.

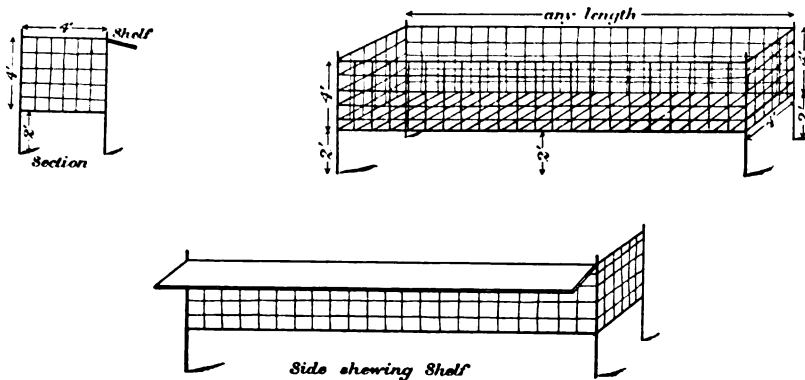
By MAJOR S. F. CLARK.

Royal Army Medical Corps.

IN the military stations of the Orange River Colony a daily destruction of valuable manure takes place which ought to make the god of agriculture weep. Nobody will take the stable litter even as a gift, and so it is burnt in incinerators of more or less doubtful efficiency, to the accompaniment of a perennial smoke and aroma, which thrust themselves more or less obtrusively upon the attention of the cantonments, in direct ratio to the direction and force of the wind for the time being. As it is possible that other garrisons in the Empire may be similarly afflicted, a description of a simple form of destructor that acts quickly and efficiently may be of interest. This installation was devised at Harrismith by Conductor Tompkins, who claims no patent rights in regard to it. It has the following advantages :—

- (1) Simplicity and cheapness.
- (2) Rapidity of action—especially in wet weather.
- (3) Manure may be unloaded directly into it.

The apparatus may be described as a large trough made of wire-work,



raised two feet above the ground. The original ones were constructed of the uprights of iron railings which abound out here, and wire from bundles of forage picked up on the veldt. The trough may be of any length, but should be 4 feet wide and deep. It should be broadside on to the prevailing wind, and the bars forming the bottom of it ought to run from side to side and not lengthwise. The mesh must be about 5 inches square, and a "shelf" of corrugated iron should be fastened along the top to reduce spillage while the litter is being transferred from

the cart to the destructor. About a foot wide is a good size for this shelf, and in any other country but South Africa it might be made of some other material. The waggon to be unloaded is backed right up to the incinerator; and the litter is set alight in the ordinary way, near the bottom.

THE MEDICAL UNIT OF THE AUXILIARY FORCES.

BY CAPTAIN J. H. P. GRAHAM.

Royal Army Medical Corps (Militia).

THE normal distribution in peace of the regimental units constituting a military force, is a factor which must largely determine the organisation of a military medical service; elasticity is aimed at to meet war conditions, but variations in fundamental principles are at any time more apparent than real.

The regimental units constituting the regular Army are chiefly located in close proximity to one another within certain limited areas, so that large numbers are brought within convenient reach of a detachment of the Royal Army Medical Corps stationed in their midst, and their individual requirements can be dealt with collectively through the "station" system. But in all branches of the Auxiliary Forces the several regimental units are more usually widely scattered and out of touch with one another. In practice they lead entirely separate existences, and are governed by dissimilar local circumstances; what aggregation of units may be transiently affected during training in camp does not affect the isolated positions they more constantly occupy, nor abrogate even temporarily the need for providing individual units with medical assistance suited to their peculiar needs. The proposed re-organisation of the Auxiliary Forces will not bring the various regimental units into closer practical relationship with one another, at least not constantly, so that in so far as the requirements of the Auxiliary Forces are concerned, the conditions which determine the plan of organisation of their medical services will remain much as at present. The "station" system is obviously unsuited to the circumstances of the Auxiliary Forces. The medical *personnel* of the Auxiliary Forces requires a much wider distribution than that of the Regular Army, in order to bring it sufficiently within reach of those it has to serve under all circumstances. A medical corps can provide the Auxiliary Forces with the field medical units they may possibly require, but it does not offer a ready means for providing regimental units with the medical and sanitary supervision they constantly need, nor for carrying out the examination of recruits, instruction in first aid, hygiene, and other regimental duties. These duties can only be efficiently discharged where a system exists which provides each regimental unit permanently with a staff charged with their performance.

What may be called for sake of a short descriptive term a "regimental system" is the one best adapted to the circumstances of the Auxiliary Forces, at least the "regimental medical unit" or staff should form the basis of any more elaborate medical organisation all branches of these forces may possess. The medical unit the Auxiliary Forces most urgently require is one akin to that called a Sanitation Unit, described by Captain Harvey in the March number of the JOURNAL OF THE ROYAL ARMY MEDICAL CORPS; a medical unit of that nature would provide regimental units of the Auxiliary Forces with a trained staff for adequately dealing with those sanitary and medical questions which constantly and immediately affect them. A period of training in camp is ordained for all branches of the Auxiliary Forces, so there occurs annually a necessity for the practical application at home of methods essential to the well-being of a force in the field. During the inter-camp periods the regimental medical staff would discharge those routine duties towards their units, which, in the Regular Army, are ordinarily undertaken by a detachment of the Royal Army Medical Corps. The auxiliary medical corps, owing to their present distribution, are little fitted to provide regimental units with the requisite medical *personnel*, particularly during the inter-camp periods, and probably the most they can do for the Auxiliary Forces is to provide them with such form of field medical unit as meets their needs when large training camps are formed. But possibly the members of the regimental medical units could be affiliated to the medical corps, though whatever their connection with the corps may be there is no question where their permanent place is, and to secure it it is expedient to adopt the practice which renders their position least equivocal.

Travel, &c.

SIERRA LEONE.

By MAJOR A. PEARSE.

Royal Army Medical Corps.

THE steady rise in importance which has taken place in recent years of the whole of Africa, is to be observed on its West Coast nearly as much as in most other parts of the Dark Continent. With the increase of our knowledge of Africa has come an improvement in the conditions of life and living, not only of the peoples whose native country it is, but also of those Europeans who, year by year, in increasing numbers, visit its shores either on pleasure or on business bent.

Sierra Leone, the subject of this article, is a part most of us have heard of, in common with the rest of the West Coast of Africa, as one of the most pestilential quarters of the globe. Formerly it was known as the "White Man's Grave," and rightly so, as few who braved its depressing and malarious climate for any length of time returned to tell their experiences; and even if they did so, they were probably too weakened in constitution and broken in health to be able to get much enjoyment out of life for many years to come. These conditions have now, thanks to the progress of science, the great discoveries of recent years in medicine, and the improvements in sanitation, undergone a material change for the better. Europeans can now go there with a reasonable hope that they will return to their native country again, and also that they will not be entirely shattered in health when they do so. But for all that, it is not a part of the globe to be visited carelessly at all times of the year.

January and February (the dry season) are the months of the year when it can be most enjoyed. On some days during these months the Harmattan wind blows from the Sahara Desert. It is dry and refreshing, in spite of its colour. When it is blowing, the whole atmosphere is loaded with a fine dust which causes a red mist and haze throughout these regions. So much so, that on arrival at Freetown one day towards the end of February, we were scarcely able to discern the houses on some of the neighbouring hills within half a mile of where the ship anchored.

We landed, and on the quay found hammocks and their native bearers (fig. 1)—which a kind friend had provided—waiting for us. In we got with some difficulty—it is not an easy matter to do so at first, without going out the other side—and were carried stretched at full length by four sturdy natives, who poise their burden on their heads and carry one smoothly and safely once they have started. It is wonderful how these native "boys" carry one for long distances up hill and down dale, over rough and smooth ground, without ever making a false step. A really good lot of "boys" take a pride in carrying one well and quickly, and most cheerful and willing they are when treated properly. The hammock is practically the only means of conveyance on this part of the coast, as horses do not thrive well, and motors and bicycles have not yet been introduced in great numbers. The first motor car ever seen in Sierra Leone arrived about the middle of 1904, and was a great source of amusement and interest to the natives. The country round Freetown is too hilly and the roads too bad

for either motors or bicycles to be of much use, except in or about the town itself.

Freetown is the chief town and port of Sierra Leone, and it was to this neighbourhood that large numbers of freed slaves were conveyed after their emancipation last century. Even now, among the older inhabitants, are to be found some who have vivid recollections of the time they spent in slavery. Here is a Cathedral, a Town Hall, Law Courts, College, the official residence of the Governor of the Colony, a Club, and the barracks for the garri-



FIG. 1.—Hammock-boys and Hammock.

son. From the town a light hill railway runs to Wilberforce, about three or four miles distant, where many of the colonial officials now reside. There is also another railway—this goes into the interior, and is one of the chief means of communication with the Protectorate of Sierra Leone. By its means trade, consisting chiefly in palm oil and palm kernels, is brought down to the coast for export. In some parts of the “Bush,” as the interior is called on the Coast, much cotton is grown by the natives. They use it for making their native cloths, &c., some of which are much to be admired, though there is not the same delicate

finish about them that one finds in similar work from the East Indies and some other native countries. To an amateur it seems that much might be done to develop this industry or, at any rate, that of cotton growing: at present there is little or no systematic work carried out in this line of business. In some parts of the Protectorate there is much rubber to be obtained in the forests, and this is collected by the natives, who are now beginning to realise its value as an article of trade. The method of collecting is by cutting niches in the stem of the rubber vine, and allowing the raw rubber to flow out, and subsequently forming it into large masses for export. Another important article of trade, and one much valued by the natives, is the kola nut. It is something like a chestnut in shape, slightly bitter but not disagreeable to the taste. If one of those nuts is presented to a traveller on arrival at a town or village, it denotes friendship. When chewed slowly, they allay thirst and ward off fatigue, and enable the eater to travel long distances without food. These nuts are exported great distances, in some cases, it is said, even across the continent to the Soudan and Arabia. Other products of Sierra Leone are rice, coffee, cassada, ground nuts, mangoes, bananas, and various other fruits. In some parts of the Protectorate there is much big game; it is, however, hard to find at some periods of the year, owing to the densely-wooded nature of the country, but when towards the end of the dry season the undergrowth is thinned, and the grass burnt by the natives for cultivation of the land, herds of antelope and buffalo (bush cow) are to be seen. Elephants are also numerous in some districts, but their tusks are said not to grow to so great a size as those of elephants on the East Coast, though the animals themselves are quite as big. The natives, however, procure a certain amount of ivory and export it. Many of the rivers abound with hippopotami, and nearly all with crocodiles, which latter may often be surprised, lying asleep in the sun on the river bank or on the branch of a large tree overhanging the water. Leopards are plentiful in some places, and much dreaded by the natives. Sometimes one is able to obtain their cubs, and very nice and interesting pets they make, too, when young, being perfectly tame and amiable with those they know, and who feed and are kind to them. Guinea fowl, pigeons, francolin (bush fowl) and duck are also found in considerable numbers in some districts, and afford some excellent sport.

As before mentioned, Freetown and the surrounding parts are inhabited by numerous descendants of freed slaves, as well as some Arabs, Syrians, and other African tribes. Up country from

the coast each tribe is more distinct, and has its own territory in the Protectorate under its own particular paramount Chief (fig. 2), or "King" as he is generally called. Among the most important tribes of the Protectorate are the Mendis, Timminis, Korankos and Limbas. The Timminis on the whole are the most civilised, and are to a great extent under Mohammedan influence, and therefore more educated and intelligent. They are also the most warlike of these tribes, though the Mendis are not far behind them in this respect, and are their natural enemies. The Mendis are practically



FIG. 2.—"King" Bayanki of Mayanki, Head of the Lokkoh Tribe.

pagans, and have as yet been little affected by Mohammedan influence, which has gradually spread across the Dark Continent from the East. Until recently they indulged in cannibalism. Their chief is a fine old man and most friendly to the British, as are most of the other chiefs, though some of their powerful satellites are not so. There are other less important tribes than those mentioned, such as the Lokkohs, the Connahs, and the Susus; these latter are a fine race, but the tribe is divided, part being in French territory and part in British. Along the

Eastern frontier is a warlike tribe, the Kissis, against whom a small and successful expedition was recently sent to stop their raids across the frontier into the Protectorate. Close to this frontier the little native village of Waima is situated, where in 1893 French and British forces were accidentally engaged in attacking each other in mistake for a common enemy. The small cemetery with the graves of those who were killed is cared for by the Government, an old native, who lives in a hut close by, getting a retaining fee to keep the rough wooden fence and graves in order.

The dwellings of all the tribes are made of the stems of trees let into the ground, with branches interwoven transversely through them. Over this kind of trellis work mud is plastered to a thickness of some 6 to 12 inches. The whole is covered in by a roof of coarse grass thatch, thus forming a structure most readily destructible by fire. Great care has consequently to be taken by the inhabitants to prevent sparks being blown about in dry weather, as their whole town may be destroyed in a very short time should a single hut accidentally catch fire.

Some of the native customs are peculiar, and among them one of the most striking is the funeral ceremony of the Lokkoh tribe. After the body has been brought out of the house, the bearers turn round and endeavour to re-enter the house with the corpse, but are stopped and pushed back by the deceased's friends or other occupants of the house. This is repeated three times by a species of more or less vigorous rushes towards the door. Other houses of the deceased's relatives are attacked in the same manner, but if entrance is not gained the corpse is carried outside the village, and laid beside a rough grave about two feet deep. One by one, the near relatives come close to the corpse, bend over it, and call the deceased by name to come back or answer, and last of all the nearest relation, who, on receiving no reply, says "He"—or "She," as the case may be—"is not here." The body is then placed in the grave and the loose earth thrown over it as quickly as possible. No one except the bearers, who are always of the same sex as the deceased, actually touch the body during the ceremony. Sometimes, if there happens to be a native in possession of a gun in the village, a final salute will be fired over the grave. Before leaving, the relatives place food and water near, to speed the spirit of the departed on its long journey, and those who have witnessed the ceremony take up a handful of dust from the grave, throwing it over their shoulder behind them as they leave the spot, this last

act being to prevent the ghost of the departed following or molesting them afterwards.

Though Sierra Leone can hardly be called a health resort, there is much to interest one in its peoples, with their quaint customs, curious ideas of civilisation and religion, and their modes of life, &c. There is also the country itself, many parts of which are practically unknown, and yet full of Nature's curios for those who care to look for them.

SANITATION IN JAPAN.

BY LIEUTENANT C. RYLEY.

Royal Army Medical Corps.

THE customs and domestic economy of the Japanese are so different to any other nation, civilised or uncivilised, that a study of their methods of personal hygiene and disease prevention well repays one's curiosity.

Those with æsthetic natures may scorn the sanitarian who, in the land of flowers and scenery, can waste a glance on such material objects as drains and water supplies. But during two tours of leave spent in various parts of Japan, I may as well confess that my enthusiasm in temples, curios, and iris fields began to wane, and my interest in the manners and customs of the people to increase.

The "back to the land" theory is seen here in its ideal sense—no nitrogen is wasted; the sewage of the villages being conveyed along open drains in front of the houses to a cess-pool just outside the town, to be later deposited on the rice-fields and vegetable gardens. This is a frequent cause of enteric amongst visitors to the country, who do not follow the native custom of eschewing raw vegetables in any form, and boiling even radishes. These open drains make themselves very evident in the hot weather, and though I will not vouch for the truth of the statement that in Nagasaki one is directed to one's destination by the second or third smell to the right, they are certainly one of the characteristics of the country.

All the large cities are provided with a water-supply, and modern sand filter-beds. In the Tokyo Exhibition the public are educated to the use of these beds by large glass models of plate cultures of *Bacillus prodigiosus* before and after the water has

been filtered. I looked in vain for something new in these filter-models; but no, the Japanese are excellent imitators, and they cannot create.

The house construction from a hygienic point of view leaves nothing to be desired. Imagine a light-framed wooden bungalow, whose walls and inner partitions are merely sliding panels. Of carpets, furniture, beds, curtains, and other germ-harbourers there are none. The inmates sit and sleep on the floor, which is covered with a rice-straw matting, taken up and aired daily. Every morning, if the day be fine, these panels are slid back, leaving the interior of the house open to the sun, light, and four winds of Heaven. This custom, though germicidal, is often resented by foreigners who may have overslept themselves. It is a little disconcerting to be thus discovered to the passers-by and to the other guests of the inn or tea-house. In the cold weather, the Japanese sleep on thick quilts called *futous*, laid on the matting floor, and cover themselves with others of the same kind, sometimes using two or three. These likewise are always to be seen airing in the sun.

It is marvellous how artistic they contrive to make these plain interiors. A gnarled beam or upright cut from a bent or twisted tree will often be left unplanned, with its knots carefully polished, and serves as a contrast to the rest of the structure; and a vase containing a single iris with its foliage, gives an effect which our own drawing-rooms, laden with bric-a-brac, cannot produce. The woodwork surrounding the panels is carved or polished, but there is no ornament of any kind, except on the 6- or 8-inch high platform of polished wood, where a kakimono is hung, and the one vase or bowl of flowers is displayed. Ten years is the average life of one of these houses, but as a village is generally destroyed by fire every few years, they seldom last long enough to become dilapidated.

Contrast these airy dwellings with one of our European houses, in which generations are born, live and die, and which are encumbered with all sorts of germ traps. I think we must admit that the former are infinitely more sanitary. The back yard, which in an English house is so often lumbered up with rubbish, is, in Japan, a dainty little garden, with diminutive trees, ornamental flowing water, and a rockery.

The Japanese certainly outdoes the Englishman in the cult of the morning tub. Every house of any pretensions has a wooden bath sunk in the floor of the back room, or sometimes in the front garden, where the major-domo and his family may be seen soaking

themselves, whilst neighbours come and chat. This custom is now being suppressed by the Japanese Government, who are passing through much the same stages of mental evolution as Adam and Eve after their eviction from Paradise; but such things may still be seen in the country districts. The face and head of a Japanese child is not a pleasing study, despite these lavations. I heard an American lady sum up the case rather well by remarking that "the Chinese wash *down* to their necks, and the Japanese *up* to them—there they stop." She added, "the missionaries could do more for young Japan with handkerchiefs and combs than with bibles"! It certainly is strange that a nation otherwise so cleanly should fall so far short in these two particulars. In regard to the head trouble, it has been offered in explanation that a dirty head is a sign of strength; that if a child's head is clean it must be a weakling.

I visited many of the thermal springs which abound in Japan. They contain varying amounts of sulphur, iron and salts, and are greatly patronised by people with rheumatism and specific diseases, also dysentery and leprosy. Some of the baths are extremely hot, often reaching 150° F., a temperature at which no European can venture in, but the natives seem to be inured to them, and soak themselves for hours at a time. At one of the hot springs in the hills, the village is left in charge of an old man during the three winter months. This amphibian is said to spend the whole season in the bath, with a stone on his lap to keep him from rising to the surface during sleep. He only emerges when the snow melts.

In regard to food, I think we have distinctly the better of them. Their diet of rice and fish is stodgy and insipid, and indigestion is almost a national complaint.

A prominent figure in Japanese domestic life is the village masseur, who is called in for almost every ache and pain and minor ailment. He is almost invariably blind, for a sightless man is said to have a more highly developed sense of touch and manipulation. It also gives employment to a class who would otherwise be dependent on the community. These men wander along the streets blowing a reed whistle to attract their patients. Their services are often requisitioned by Europeans, who declare that after a long day's tramp all sense of fatigue and stiffness is removed by their manipulations.

The greatest endemic scourge to Japan is undoubtedly beri-beri, which incapacitates almost as many men from honest labour as conscription. Notwithstanding the brilliant results achieved in their Navy by an improved diet in the prevention of this disease,

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the food theory is losing ground. In fact, a Japanese bacteriologist recently claimed to have confirmed Hamilton Wright's work in the Straits Settlements, maintaining that it is caused by a bacterial infection of the duodenum.

Their freedom from intestinal diseases during the late war they attribute to the substitution of large tea cauldrons for water carts, both in camp and at the firing line. I think that the practice of giving weak tea to troops in war time is worthy of trial in our own Army. By this means, a refreshing form of sterilised water can be prepared and served out in half an hour, and muddy water is made less conspicuous and more palatable.

Japanese medical officers have staff rank, and any non-compliance with their recommendations entails a written explanation to headquarters by the officer concerned. They certainly understand the advantages of prevention over treatment of disease.

Reports, &c.

NOTES ON THE MANAGEMENT OF THE OFFICERS' MESS IN A TEMPORARY HOSPITAL.

BY LIEUTENANT-COLONEL N. C. FERGUSON, C.M.G.
Royal Army Medical Corps.

ON mobilisation of a field medical unit, the question of messing arrangements for his staff of officers, is one of the most difficult which confronts the much harassed commanding officer. And as the campaign proceeds and he loses his mess secretary and most of the original members, the mess tends to become bankrupt, or a quite unjustifiable accumulation of funds accrues. In either case the members are apt to become discontented. With a view to trying to obviate this unpleasant state of affairs, and of inviting discussion on this important subject, I submit the accompanying Mess Rules, which are the result of five years' evolution and of the careful thought of many officers of considerable experience.

Specimen account sheets are appended, which to officers unaccustomed to book-keeping will be a great help. They have been compiled with much ingenuity by Captain F. W. W. Dawson, R.A.M.C., and provide for every contingency.

The accompanying Mess Rules are suitable for a temporary mess, the equipment of which has to be paid for at once, and recovered by degrees from members who are constantly changing. In addition they provide :

(1) For the inclusion of Civil Surgeons as members, and make the constitution of the mess intelligible to them. (2) For the floating balance for current expenses, so that all accounts can be settled at once. (The deposit referred to in Rule 6 should vary with the requirements of the mess and cover the initial expenditure). (3) That there be no divided responsibility; the mess secretary being free to act and only responsible to the officer commanding and quarterly meeting. (4) That no undue accumulation of funds takes place. By Rule 24 the rate of subscription, contribution and contingent can be altered quarterly, the value of the immediately realisable wine stock being the security for the deposits. (5) For the closing of the mess or handing over the accounts at short notice. (6) For the carrying out of the King's Regulations on this subject in every particular.

RULES OF THE OFFICERS' MESS, ROYAL ARMY MEDICAL CORPS, MIDDELBURG,
CAPE COLONY.

(1) The Mess shall be called "The Officers' Mess, Royal Army Medical Corps, Middelburg, Cape Colony."

Membership.

(2) All officers of the Corps serving in the Middelburg Sub-District shall be members of the Mess.

(3) Married officers of the Corps shall be non-dining members, except when their wives and families are absent, in which case they shall become dining members. (Paragraph 933, King's Regulations.)

(4) Civil Surgeons attached for duty shall have the option, if they so desire, of becoming members or honorary dining members. Officers of other Corps shall be honorary dining members.

(5) Married Civil Surgeons who have their wives and families with them, and who may wish to use the Mess, shall pay the same subscription as married officers of the Corps.

Subscriptions and Contributions.

(6) Dining members shall pay a contribution of £2, payable in three monthly instalments, and a monthly subscription equal to half of one day's pay. They shall on joining the Mess pay a deposit of £2, which shall be credited to them in their last Mess bill as dining members. (Paragraphs 949 and 955, King's Regulations.)

(7) Non-dining members shall pay half the above subscriptions and no deposit.

(8) Honorary dining members shall pay no contributions, but shall pay 10s. per month subscription and 6d. a day table money; they shall pay no other subscription.

(9) A contingent subscription shall be charged, when necessary, the amount to be fixed by the quarterly Mess meeting and not to exceed 10s. per month. This subscription shall be paid by the dining and non-dining members in full. (Paragraph 964, King's Regulations.)

(10) Non-dining members and private guests having meals at the Mess will be charged at the following rate: breakfast, 1s. 2d.; lunch, 1s.; tea, 4d.; dinner, 2s. 6d. On "guest nights" the price of dinner will be 3s.

(11) The profit on wines shall not exceed 10 per cent., half of which is to go to the catering fund and half to the general mess fund, and the value of immediately realisable stock of wine in hand at end of month shall not be less than £6 or exceed £8.

(12) The daily wine book shall be placed in the Mess room for inspection at lunch time every day. Errors not pointed out at the time cannot be afterwards rectified.

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Guests.

(13) "Guest nights" shall be arranged by the Mess Secretary. There shall not be more than one a week and a notice of the "guest night" shall be posted up at least three days before the date.

(14) On occasions when the nursing sisters use the tennis court or golf links they will be considered Mess guests; all other visitors to the tennis court or golf links will be considered private guests.

(15) Mess guests (whether for afternoon entertainments or dinner) will be invited by the Mess Secretary, and their names posted in the Mess at least twenty-four hours before the date of entertainment, and only members initialling the notice will be required to contribute to the cost of such entertainments.

(16) Members of the Mess inviting private guests shall bear the whole cost of their entertainment. (Paragraph 967, King's Regulations.)

Servants.

(17) The number of servants and their wages shall be decided by the Mess Secretary, who shall be responsible for their discipline and general working hours.

(18) The equipment of the dining room shall always be kept up to a fixed establishment of eight dining members.

(19) The Mess servants are not to be reprov'd except by the Mess Secretary. Any complaints are to be made in writing to him, or placed in the book kept for that purpose.

(20) The Mess servants are not to be taken to wait at meals on the golf links unless by the sanction of the Mess Secretary, when a notice will be posted up in the ante-room to that effect. Officers' private servants will be required to take their turn of duty in the Mess.

Newspapers.

(21) Newspapers, periodicals and books will be ordered by the quarterly Mess meeting for the ensuing quarter.

(22) Newspapers, periodicals and books are not to be removed from the Mess.

(23) Newspapers and periodicals, as soon as new ones arrive, will be passed round to the married officers of the Corps and married Civil-Surgeons.

Quarterly Meeting.

(24) A general meeting of the members of the Mess will be held quarterly for the purpose of electing a Mess Secretary, considering the amount of contribution, subscriptions and contingent, ordering papers for the ensuing quarter, and for settling any other business that may be brought before it. The votes of members will be taken upon any proposition on which a difference of opinion exists, and the point will be decided by the majority of votes, provided the Commanding Officer concurs. The account books and quarterly audit board will be laid before the meeting for examination. (Paragraphs 941 and 931, King's Regulations.)

Accounts.

(25) The following accounts and books will be kept by the Mess Secretary : (a) Cash book in which every cost transaction is to be entered ; (b) daily wine book in two parts : (1) Copy of waiter's book, showing daily consumption by each member in detail, the totals carried on each day as in the hospital diet account ; (2) daily wine bill of each member ; (c)¹ stock and proof account, showing the value of stock in hand on 1st and received during the month at cost and selling price, also amount sold during the month and remaining on last day ; (d) monthly wine account, compiled from (b) 1 and 2 ; (e) catering account ; (f) general Mess account ; (g) summary of Mess bills ; (h) furniture

¹ In addition, it will be necessary to take stock on the 25th of the month, to comply with Rule 11, ordering more or returning surplus stock if necessary.

DAILY WINE ACCOUNT, APRIL, 1907.

	Name	Cham- pagne, l.	Cham- pagne, g. 7r. 6d.	Whisky, ozs., 4d.	Whisky, bottles, 8s.	Sherry, glasses, 4d.	Port, glasses, 6d.	Mineral, l.	Beer, pils, 4d.	Gin, glasses, 3d.	Bitters, l.	Cigarettes, l.	Crème Dedeasole, 6d.	Char- treuse, 6d.	Van der Hum, 4d.	Vermouth, 3d.	Cigars, 4d.	Total
1st	Col. A. M. O.	..	..	8	..	..	1	8	..	1	..	..	..	..	..	..	..	£ s. d.
"	Lieut.-Col. S. M. O.	..	..	4	..	..	1	4	..	..	..	..	..	..	..	..	..	0 1 9
"	Major C.	..	..	2	..	..	..	2	1	..	..	..	..	..	1	..	..	0 3 10
"	Capt. D.	..	..	..	1	..	..	2	1	..	..	..	..	..	..	..	..	0 1 7
"	Lieut. and Qmr. X.	..	..	1	..	..	..	1	3	1	..	..	..	..	..	..	..	0 8 6
"	Civ. Surg. J.	..	..	3	..	..	1	3	..	..	..	..	..	..	..	..	..	0 1 9
"	Civ. Surg. W.	..	..	4	..	..	..	4	1	..	..	12	..	..	..	..	..	0 1 9
"	Rev. S. P.	..	..	2	..	..	..	2	..	..	..	..	..	..	..	..	..	0 3 0
"	Mess Guests	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	0 0 2
Totals	..	..	..	19	1	..	3	23	6	2	3	20	..	1	1	..	1	£1 3 4
2nd	Col. A. M. O.	..	..	2	..	..	1	2	..	..	..	..	..	..	..	..	..	£ s. d.
"	Lieut.-Col. S. M. O.	..	..	..	1	1	..	3	..	..	1	6	..	..	..	..	..	0 1 9
"	Major C.	..	..	3	..	..	..	3	1	..	1	..	..	..	..	1	..	0 9 6
"	Capt. I.	..	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	0 1 11
"	Capt. D.	..	..	..	..	..	..	4	1	..	..	..	..	..	..	..	..	0 0 6
"	Lieut. and Qmr. X.	..	..	1	..	..	..	1	2	1	1	..	..	..	..	..	..	0 0 8
"	Civ. Surg. J.	..	..	4	..	..	..	4	1	..	..	..	..	1	..	..	1	0 1 9
"	Civ. Surg. W.	..	..	2	..	..	..	2	2	1	1	4	..	..	..	..	..	0 2 6
"	Rev. S. P.	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	0 2 2
Total	..	..	..	32	2	2	4	45	13	4	8	32	..	2	1	1	3	£2 4 4
3rd to 30th	Total for month	6	4	360	20	120	100	1,200	120	70	120	180	10	20	48	16	60	£36 7 6

DAILY TOTAL OF OFFICERS' WINE BILLS, APRIL, 1907.

	Col. A. M. O.	Lieut.- Col. S. M. O.	Major C.	Capt. I.	Capt. D.	Lieut. and Qmr. X.	Civil Surg. J.	Civil Surg. W.	Civil Surg. B.	Rev. S. P.	Mess guests	Total
1st ..	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
"	0 1 9	0 3 10	0 1 7	0 0 0	0 8 6	0 1 9	0 1 9	0 3 0	0 0 0	0 0 2	0 1 0	1 3 4
2nd	0 1 9	0 9 6	0 1 11	0 0 6	0 0 8	0 1 9	0 2 6	0 2 2	0 0 0	0 0 3	0 0 0	1 1 0
&c., to 30th	&c.	&c.	&c.	&c.	&c.	&c.	&c.	&c.	&c.	&c.	&c.	&c., &c.
Total for month	£0 7 4	£7 14 6	£6 12 4	£0 6 9	£3 14 7	£2 15 6	£5 15 0	£6 10 0	£0 14 2	£0 7 4	£1 10 0	£36 7 6

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account; (i) balance sheet; (j) diary; (k) minutes of quarterly meeting; (l) suggestion book; (m) card book.

Payment of Mess Bills.

(26) Every officer is personally to pay to the Mess President his Mess bill, and all authorised subscriptions, on or before the 7th of each month, and the President of the Mess Committee will report in writing to the Commanding Officer any omission to do so. The officer concerned will then be called upon for an explanation. If the result is unsatisfactory, and the account is not settled by the 14th of the month, the circumstances will be reported to the General Commanding. (Paragraph 932, King's Regulations.)

NOTES ON THE SPECIMEN ACCOUNT SHEETS, BY CAPTAIN F. W. W. DAWSON, ROYAL ARMY MEDICAL CORPS.

In this scheme of accounts it will be understood that the Mess is one attached to a temporary hospital. Colonel A. M. O. is the Administrative Officer from headquarters, and arrived on April 1st to make a surprise visit. He left on the 4th. He would not be entertained by the Mess, but is an honorary member (Rule 10). Lieutenant-Colonel S. M. O. is in command and Major C. is attached for duty. Their accounts present no extraordinary features. Captain I. is a married officer, and therefore pays half subscription (Rule 7). When on orderly duty he lunches at the Mess (Rule 10). Captain D. left on the 14th for headquarters; not being in mess half the month he pays no subscriptions, and his deposit of £2

CR.

CASH BOOK,

--	Name	On what account	Bank	Cash
			£ s. d.	£ s. d.
F 1	Balance	Credit Carried forward ..	7 1 0	0 5 0
T 1	Colonel A. M. O. ..	Mess Bill	2 18 4	0 0 0
T 2	Lieut.-Col. S. M. O. ..	" "	0 0 0	18 8 0
T 3	Major C.	" "	0 0 0	18 3 6
T 4	Captain I.	" "	0 0 0	4 13 10
T 5	Captain D.	" "	0 0 0	2 11 9
T 6	Lieut. and Qmr. X. ..	" "	3 13 6	0 0 0
T 7	Civ. Surg. J.	" "	0 0 0	13 5 6
T 8	Civ. Surg. W.	" "	0 0 0	13 1 6
T 9	Civ. Surg. B.	" "	0 0 0	2 9 0
T 10	Rev. S. P.	" "	7 0 4	0 0 0
		W. B., Deficiencies, 2s. 0d. wine		
	Pte. Simple ..	W 12, Breakages 1s. 6d.	0 0 0	0 4 6
		C 18, " 1s. 0d.		
			<hr/>	<hr/>
			£20 13 2	£73 2 7

is returned to him (Rule 6). Lieutenant and Quartermaster X. is also a married officer. Two Civil Surgeons, namely, Civil Surgeons J. and W., arrived on the 1st. Civil Surgeon J. joined the Mess (Rule 4). He therefore pays a subscription of 10s. (half a day's pay), and one third of his entrance subscription, 13s. 4d. He also deposits £2 (Rule 6). He becomes a member, and is entitled to vote at the meetings, &c. (Rule 4). Civil Surgeon W. prefers to be an honorary member, and pays 10s. a month subscription and 6d. a day table money (Rule 8). The Reverend S. P. is also an honorary member of the mess. Civil Surgeon B. is married and pays 5s. a month, and is now paying his second instalment, 6s. 8d. (one-third of a pound entrance subscription) (Rules 4 and 7). He arrived for duty on December 1, 1906. The cost of entertaining the mess guests is divided evenly among the members, all members having signified their intention to subscribe (Rule 15). The deposit of £2 per dining member is for the purpose of having a floating balance for buying articles required. This month the expenditure has been considerable, but it will be recovered by the contingent and by the messing (Rule 24). The card account is a contra one, and is a paper transaction as regards credits. The figures in italics give the cross references: "T" Summary, "F" Mess Account, "C" Catering, "W" Wine.

APRIL, 1907.

DR.

—	Name	On what account	Bank	Cash	Receipt.
			£ s. d.	£ s. d.	
C 28	Pte. Con. . .	Cook	0 0 0	1 10 0	C. Cook.
C 26)	Pte. Simple ..	Waiter	0 0 0	1 10 0	V. Simple.
F 12)					
C 27	Pte. Wash ..	Sculleryman ..	0 0 0	1 0 0	J. Wash.
C 21)		Fish .. £2 5 0)			
W 17)	Cold storage ..	Ice .. 1 0 0)	0 0 0	3 5 0	Receipt filed.
C 19	Chalk and W. ..	Milk	2 0 0	0 0 0	" "
C 20	Doemoff	Eggs and Fruit ..	0 0 0	1 14 0	" "
C 23	Corpl. Cook ..	Fowls	0 0 0	0 16 0	" "
C 22	Pte. Simple ..	Local purchases ..	0 0 0	3 0 0	V. Simple.
C 29)		Crockery £1 0 0)			
W 18)	Mackinnon {	Glasses 0 4 6)	3 4 6	0 0 0	Receipts filed.
F 13)		Pictures 2 0 0)			
C 25)	S. A. Garrison Insti-	Grocery £21 12 0)			
W 16)	tute	Wine 32 9 6)	0 0 0	54 1 6	" "
W 15	R. A. M. C. Canteen	Beer	2 0 0	0 0 0	" "
F 14	Lesb.	Papers	1 15 0	0 0 0	" "
F 18	Jones	Playing cards ..	0 0 0	0 5 0	" "
F 15	Pete	Wages, Golf links ..	0 0 0	1 10 0	x Pete (his mark).
T 16 {	Du Voit and	Tennis net	0 0 0	3 0 0	Receipt filed.
T 13	De Taal				
F 19	Officers	Club Bills	10 10 0	0 0 0	" "
	Balance	Credit	1 3 8	1 11 1	
			£20 13 2	£73 2 7	

STOCK AND PROFIT ACCOUNT FOR MONTH OF APRIL, 1907.

Names of goods	Brought forward		Stock received during the month	Cost price	Value at cost price	Total value of stock	Profits	Sold	Selling price	Amount	Stock remaining on hand	Cost price	Value at cost price	Names of tradesmen, &c.
	Stock on hand	Value at cost price												
Minerals	72	£ s. d. 0 5 0	1,188	10d. doz.	£ s. d. 4 2 6	£ s. d. 4 7 6	£ s. d. 0 16 8	1,200	1d.	£ s. d. 5 0 0	60	10d. doz.	£ s. d. 0 4 2	1 bottle = 26 ozs.
Whiskey	1 bottle (19 ozs.)	0 7 6	15 bottles	5s.	3 15 0	4 4 6	1 18 9	13 bottles (22 ozs.)	4d. oz.	6 0 0	2 bottles (17 ozs.)	5s. bottle	0 3 8	
Cigars ..	10	0 3 0	100	80s.	1 10 0	1 13 0	0 2 0	60	4d. each	1 0 0	5)	80s. 100	0 15 0	
			&c., for each article of stock											
		£6 14 2			£34 9 6		£3 0 6			£36 7 6			£7 16 8	

The profit on wine for the month is £3 0s. 6d. + 2s. for deficiencies, and 1s. 6d. for breakages, paid in cash by the waiter. Total, £3 4s. 0d. But from this must be deducted the bills for ice, glasses, and corkscrew, as is done in the monthly Wine Account, No. 4.

£6 5 6

Stock in hand : { Not realizable (opened bottles of liqueurs, &c.)

1 11 2

£7 16 8

WINE ACCOUNT, APRIL, 1907.

Cr.	£ s. d.	Dr.	£ s. d.
Value of Stock in Hand, April 30th	..	15 R.A.M.C. Canteen Beer ..	..
CASH RECEIVED FROM WINE BILLS—		16 S.A.G.I. Wines ..	..
2 Colonel A. M. O. ..	7 16 8	17 Cold Storage Ice ..	..
3 Lieutenant-Colonel S. M. O. ..	0 7 4	18 Mackinnon Glasses ..	..
4 Major C. ..	7 14 6	" Corkscrews ..	..
5 Captain I. ..	6 12 4	19 Profit on Wines Sales transferred, half to General	..
6 Captain D. ..	0 6 9	and half to Catering Funds..	..
7 Lieutenant and Quartermaster X. ..	3 14 7	20 Stock in Hand, April 1st..	..
8 Civil Surgeon J. ..	2 15 6		
9 Civil Surgeon W. ..	5 15 0		
10 Civil Surgeon B. ..	6 10 0		
11 Rev. S. P. ..	0 14 2		
Cash from Private Simple —	0 7 4		
12 Breakages ..	0 1 6		
13 Deficiencies ..	0 2 0		
14 Mess Guests' Wine Account ..	1 10 0		
	<u>£44 7 8</u>		<u>£44 7 8</u>
Profit in Wines sold in the Stock and Profit		Cold Storage Ice ..	..
Account would be ..	£3 2 6	Mackinnon ..	..
Cash from Private Simple for Breakages ..	0 1 6	" ..	..
	<u>£3 4 0</u>	Profit to other Accounts	..
			<u>£3 4 0</u>

CATERING, APRIL, 1907.

Cr.				£ s. d.						Dr.
										£ s. d.
COL. A. M. O.	..	1 4 days at 3s. 6d.	..	..	..	..	..	..	..	2 0 0
	..	2 Table money	..	..	..	..	..	..	..	1 14 0
	..	3 30 days at 3s. 6d.	..	..	..	..	..	..	..	2 5 0
LT.-COL. S. M. O.	..	4 Private guests, 2 dinners at 2s., 4 teas at 4d.	..	..	..	..	..	..	..	3 0 0
	..	5 30 days at 3s. 6d.	..	..	..	..	..	..	..	0 16 0
MAJOR C.	..	6 1 private guest, 1 dinner at 3s., 1 lunch 1s.	..	..	..	..	..	..	..	1 0 0
CAPT. I.	..	7 8 lunches at 1s., 1 dinner at 3s.	..	..	..	..	..	..	..	21 12 0
CAPT. D.	..	8 13 days at 3s. 6d.	..	..	..	..	..	..	..	0 15 0
LT. AND QMR. X.	..	9 1 breakfast at 1s. 2d., 1 lunch at 1s.	..	..	..	..	..	..	..	1 0 0
CIVIL SURG. J.	..	10 30 days at 3s. 6d.	..	..	..	..	..	..	..	0 15 0
CIVIL SURG. W.	..	11 30 days at 3s. 6d.	..	..	..	..	..	..	..	1 0 0
	..	12 Table money	..	..	..	..	..	..	..	1 10 0
CIVIL SURG. B.	..	13 8 lunches at 1s.	..	..	..	..	..	..	..
	..	14 1 dinner at 3s.	..	..	..	..	..	..	..
REV. S. P.	..	15 30 days at 3s. 6d.	..	..	..	..	..	..	..
	..	16 Table money	..	..	..	..	..	..	..
	..	17 Private guest, 1 dinner at 3s.	..	..	..	..	..	..	..
MESS GUESTS	..	18 3 dinners at 3s., 12 teas at 4d.	..	..	..	..	..	..	..
	..	19 Private Simple, breakages	..	..	..	..	..	..	..
	..	W 19 Half profit from wine account	..	..	..	..	..	..	..
		29 Advanced from general fund ¹	..	34	11	9				
			..	1	0	3				
				£35	12	0				

¹ The rate of catering (3s. 6d.) was fixed at too low a figure this month, partly owing to the non-inclusion of an outstanding bill (24). This will be adjusted next month by debiting the catering account with £1 Os. 8d.

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SUMMARY OF MESS

T 7	Col. A. M. O.	Lieut.-Col. S. M. O.	Major C.	Capt. I.	Capt. D.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Subscriptions	0 0 0	0 15F40	0 10F40	0 3F411	0 0 0
Contributions	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Deposit ..	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Messing ..	0 14C10	5 5C30	5 5C50	0 11C70	2 7C88
Wine account	0 7 4W2	7 14 6W3	6 12 4W4	0 6 9W5	3 14 7W6
Private guests	0 0 0	0 7 4C4	0 4C60	0 0 0	0 0 0
Mess guests ..	0 0 0	0 7 2	0 7 2	0 7 2	0 0 0
Contingent ..	0 0 0	0 5 0	0 5 0	0 5 0	0 0 0
Card losses ..	1 15 0	0 0 0	2 10 0	0 0 0	0 0 0
Table money..	0 2C20	0 0 0	0 0 0	0 0 0	0 0 0
Officers' Club..	0 0 0	5 0 0	2 10 0	3 0 0	0 0 0
Total debits ..	£2 18 4	£19 14 0	£18 3 6	£4 13 10	£6 2 3
CREDITS—					
Cards ..	0 0 0	1 6 0	0 0 0	0 0 0	1 10 6
Deposit re- turned	0 0 0	0 0 0	0 0 0	0 0 0	2 0 0
Grand totals..	£2 18 4	£18 8 0	£18 3 6	£4 13 10	£2 11 9
	1	2	3	4	5

FURNITURE ACCOUNT, APRIL, 1907.

Cr.	£ s. d.	Dr.	£ s. d.
To value of furniture, cutlery, crockery, &c., April 1, 1907	15 0 0	By depreciation..	0 10 0
F13 F16 „ value of purchases from Gen. Account	5 0 0	„ value furniture, &c., April 30, 1907	20 14 6
C 24 „ value of purchases from Catering Ac- count	1 0 0		
W18 „ value of purchases from Wine Account	0 4 6		
	£21 4 6		£21 4 6

BILLS, APRIL, 1907.

Lieut. and Qmr. X.	Civil-Surg. J.	Civil-Surg. W.	Civil-Surg. B.	Rev. S. P.	Mess guests	Total.
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
0 2F4 10	0 10F4 0	0 0 0	0 5F4 0	0 0 0	0 0 0	F 4 2 6 9
0 0 0	0 13 4	0 10 0	0 6 8	0 10 0	0 0 0	F 5 2 0 0
0 0 0	2 0 0	0 0 0	0 0 0	0 0 0	0 0 0	F 6 2 0 0
0 3C9 0	5 5C10 0	5 5C11 0	0 11C13 0	5 5C14 0	0 13C17 0	31 4 8
2 15 6W7	5 15W8 0	6 10W9 0	0 14 2W10	0 7 4W11	1 10W14 0	36 7 6
0 0 0	0 0 0	0 0 0	0 0 0	0 3C16 0	0 0 0	0 14 4
0 7 2	0 7 2	0 0 0	0 7 2	0 0 0	0 0 0	T11 2 3 0
0 5 0	0 5 0	0 0 0	0 5 0	0 0 0	0 0 0	F 7 1 10 0
0 0 0	0 0 0	0 1 6	0 0 0	0 0 0	0 0 0	F12 4 6 6
0 0 0	0 0 0	0 15C12 0	0 0 0	0 15C15 0	0 0 0	1 12 0
0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	T13 10 10 0
£3 13 6	£14 15 6	£13 1 6	£2 9 0	£7 0 4	£2 3T11 0	—
0 0 0	1 10 0	0 0 0	0 0 0	0 0 0	0 0 0	T12 £4 6 6
0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	F17 2 0 0
£3 13 6	£13 5 6	£13 1 6	£2 9 0	£7 0 4	£2 3 0	—
6	7	8	9	10	11	

BALANCE SHEET, APRIL, 1907.

Assets.		Liabilities.	
	£ s. d.		£ s. d.
To value of stock of wine ..	7 16 8	By deposit of Lt.-Col. S.M.O.	2 0 0
" " " furniture ..	21 4 6	" " " Major C.	2 0 0
" " " Cash in hand and in bank..	2 14 9	" " " Civil-Surg. J. ..	2 0 0
		" " " Balance credit ..	25 15 11
	£31 15 11		£31 15 11

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DIARY, APRIL, 1907.

Date	Name	Credits	Break- fast	Lunch	Tea	Dinner	Remarks
1st	Col. A. M. O.	Arrived 6 a.m.
„	Civil Surg. W. ..	..	..	..	..	..	„ „ „
„	„ „ J. ..	..	..	..	..	..	„ „ „
4th	Col. A. M. O. ..	..	..	..	..	..	Left by 10 p.m. train
5th	Capt. I. ..	..	..	1	..	..
„	Lt.-Col. S. M. O., Guests	..	..	..	..	1	
6th	Mess Guests	..	..	..	12	..	Tennis party to meet Prin- cipal Matron
7th	Civil Surg. B. ..	..	..	1	..	..
10th	Captain I. ..	..	..	1	..	..
12th	Civil Surg. B. ..	..	..	1	..	1	
„	Captain I. ..	..	..	..	..	1	
„	Lt. and Qmr. X. ..	..	..	..	..	1	
„	Lt.-Col. S. M. O., Guest	..	..	..	..	1	
„	Major C. ..	..	..	..	..	1	
„	Mess Guests	..	..	..	..	2	Resident Magistrate, Col. Figgett, R. Fus.
14th	Captain D. ..	£2	1	1	..	..	Left by 2 p.m. train. Deposit returned
15th	„ I. ..	..	..	1	..	..
17th	Civil Surg. B. ..	..	..	1	..	..
19th	Captain I. ..	..	..	1	..	..
„	Lt.-Col. S. M. O. ..	..	..	..	4	..	
„	Rev. S. P., Guests	..	..	..	..	1	
21st	Civil Surg. B. ..	..	..	1	..	..
„	Major C., Guest	..	..	1	..	..
„	Mess Guest	..	..	..	..	1	Major Izal, R.A.M.C., Sanitary Officer
22nd	Captain I. ..	..	..	1	..	..
23rd	„ „ ..	..	..	1	..	..
„	Civil Surg. B. ..	..	..	1	..	..
24th	„ „ „ ..	..	..	1	..	..
25th	Captain I. ..	..	..	1	..	..
„	Civil Surg. B. ..	..	..	1	..	..
27th	Captain I. ..	..	..	1	..	..
28th	Civil Surg. B. ..	..	..	1	..	..

Reviews.

PROCEEDINGS OF THE CONFERENCE ON TEACHING OF HYGIENE AND
TEMPERANCE IN THE UNIVERSITIES AND SCHOOLS OF THE BRITISH
EMPIRE, 1907. London: Bale, Sons and Danielsson, Limited, 1907.
2s. net.

This is a small volume of 130 pages, containing the text of the speeches and written addresses delivered at this Conference in April last, which was presided over by Lord Strathcona, Sir John Cockburn and Sir John Gorst successively. Some account of the actual procedure adopted by the various Colonial Governments, Canada, Australia and New Zealand, in carrying out the teaching of these subjects was given by Mr. J. L. Hughes, Mr. Alfred Moseley, Mr. Deakin and others; also the teaching of the subject in France and Scandinavia was shortly described. It is perhaps not generally known that throughout the Dominion and the Commonwealth, New Zealand and the Crown Colonies, instruction of an elementary but sufficient character in Hygiene and Physiology (including Temperance), is regularly given to all scholars attending Elementary Schools. The speeches generally were marked by a studied moderation in tone. Sir John Cockburn uttered a word of warning against exaggeration: "I do not think it is wise to hang on the schoolroom walls charts showing the condition of a drunkard's stomach in its last stage. And one has also to remember that these drawings are very highly coloured. Nor would I approve of such experiments as that of placing an oyster in a glass of whisky, and showing children how impossible it is to digest shellfish if you take spirits. You never get quite those conditions actually, and I certainly think that the best kind of teaching avoids these exaggerations" (p. 29).

In New Zealand, apparently, the children are, as might be expected, living generally under better conditions than are possible for the majority of the town children in the older countries; almost every little home has a bath (p. 36); they are "well fed and clean physically; a fine lot of little animals, as fine as you will see anywhere," but nevertheless, "during the past few months an examination has been made of the teeth of the scholars, revealing a deplorable condition of neglect in this matter" (p. 40). The use of the toothbrush is as necessary at the Antipodes as it is here. It is strange to be told (p. 39) that there are "an increasing number of teachers who supplement the ordinary club and dumb bell exercises by others, in which at frequent and regular intervals practice in deep breathing is given." One would have thought that there would be sufficient space in these newer countries for children to be able to run about and jump, and so breathe deeply in a natural manner, rather than after the artificial fashion of a drill book.

Mr. Alfred Mosely bore testimony to the temperate habits, in regard to alcohol, of the population of the United States. Their drink bill is something like half that of the United Kingdom (the population being nearly double); the great bulk of the liquor that is drunk is consumed by

the newer immigrants; "the true-born American is usually largely a man of temperance. You may go to a large hotel there and see nothing but water being consumed. Wine, spirits and beer enter to a very small extent into the consumption of the average American, who had been born and bred in the country, who had been educated in the United States, and had thus had the enlightened education which the United States had become so proverbial for" (p. 43).

In our Crown Colonies it appears that good progress has been made in teaching Hygiene to the young population. Mr. Cantlie stated that the subject is taught in every colony where circumstances permit; and, in accordance with Mr. Chamberlain's wise instructions, taught in such a way as to form a most valuable part of the educational scheme. Instruction is given in regard to those diseases which the individual Colony most suffers from; malaria, of course, is the most important and widespread. In the West Coast colonies, for instance, the children are first told about the mosquito, and not only are they told, but they are shown the mosquito and its egg, how the egg develops into the larva, then the pupa, then the perfect insect. They have bottles of water in the schools, eggs are put in, after a few days they hatch, and the pupils watch the development until the fully fledged mosquito results. This is a real "nature study," and in itself a valuable piece of educational training. It is also essential, because "to tell a native that that wriggling, worm-like body in the water tank would ever develop into a mosquito would only make him laugh at you." Sir William Macgregor, who first introduced this method of teaching, had found that it was impossible to make the Italian peasantry believe that these wriggling bodies would ever become mosquitoes, though scientific men, and the upper classes generally, had been talking about it for a long time. By lantern slides and demonstrations and diagrams the Colonial children are shown the life-history of the malarial plasmodium, and from that, as an educational basis, a knowledge of other diseases, their causation and prevention, is spread abroad. Mr. Cantlie said that "there is now no British Colony of any importance in which hygiene is not taught."

Miss Ravenhill emphasised the point that it was of greater importance to impress on the public mind that it was rather the preparation of the teachers to give this teaching, and to diffuse this atmosphere, which they desired, than the actual, direct, theoretical instruction of young children. It was the formation of habit through the work of well-instructed teachers at which we must aim. The test of education was character and conduct at thirty-five, and not examination after three months' teaching.

The Conference passed a resolution recording its satisfaction that this systematic instruction is given in the Colonies, and urging on all local authorities the necessity for providing the teaching of Hygiene and Temperance as an essential part of the curriculum for all children.

At the second meeting Sir John Gorst pointed out that the two great obstacles to the progress of hygiene in this and other countries are (1) ignorance, and (2) selfishness; not ignorance of scientific facts about health, because nowadays these are generally known, but ignorance of their practical application to the ordinary incidents of life. How many thousands of people, for instance, travel about in railway carriages sealed against fresh air; how many millions sleep in a vitiated atmosphere, because they have been taught that night air is dangerous? The second

obstacle to progress, selfishness, Sir John laid to the charge of the propertied classes, who are reluctant to increase the rates.

Dr. Hellenius Seppala gave an account (p. 90) of the teaching of hygiene and temperance in Scandinavia; he stated that Finland is, amongst all the countries of Europe, the nearest to the final aim of temperance work; before 1866 the yearly consumption of "distilled drinks" was about 20 litres per head, now it is a little over 2 litres only; 89 per cent. of their present legislators are in favour of absolute State prohibition of the manufacture, sale or importation of all intoxicating liquors, except for medical or technical purposes. Very soon they hope to get a complete prohibitory law; public opinion, including that of the unions of working men and university students, is ripe for it. In Norway, also, State prohibition is only a question of time; in Denmark public opinion demands local option; in Sweden the "House of Parliament" recently voted for State prohibition, "although this was of course a horror for their House of Lords." In the schools of Finland there is a great temperance propaganda, there are special temperance teachers, a special temperance manual, and instruction on the effects of alcohol is given once a week. The great majority of the school children are total abstainers. In these regions enthusiasm in the cause of total abstinence seems to have reached its utmost development.

Sir Victor Horsley's account of the state of opinion in the secondary schools of our own country showed a very different condition of things. He had written to the headmasters of all the large secondary boarding schools, and asked them whether it was the custom to give alcohol to the children in their schools. (No doubt Sir Victor applies the expression, "children" to everyone *in statu pupillari*; or perhaps he had in mind Canon 90 (of 1603) in which it signifies all under 21 years of age; it is, however, not generally used in reference to members of the Sixth at Winchester and Eton, and other similar seats of learning at the present day; and readers of *Tom Brown* will remember that Old Brooke wore a beard). The answers received showed that "at the present time 72 per cent. of our secondary schools may truthfully and honestly be described as total abstinence schools." Sir Victor had no conception that the common sense and scientific position on this subject had reached such a development. With regard to the other 28 per cent. he said, "it is perfectly astonishing what a senseless habit has persisted in some schools in this country. I need hardly say that these are the old schools, where customs freeze up the intellect very often. There is one public school in this country where 50 per cent. of the boys are given alcohol, and all the boys are given alcohol on six Saints' days in the year. Of course we cannot conceive how any man, at this time of civilised life, could do such a thing. . . . Again, all masters are agreed that boys below 15 should not have any alcohol; there is no doubt about that. But why, directly a boy becomes 15 years of age, alcohol is no longer injurious to him I cannot understand." However, comfort is derived from the reflection that "in the evolution of human progress the 28 per cent. of schools where alcohol is still consumed, will shortly shrink to nothing."

In spite of Sir Victor Horsley's indignation, it will be generally allowed that these schools—the leading secondary schools of this country—even if (according to prevalent opinion) they are not successful in imparting much knowledge, do at least exercise a beneficial influence on the forma-

tion of character. No one believes in the literal accuracy of the old Duke's "playing fields of Eton" legend; but nearly every one believes that there is a considerable substratum of truth in the story; and that in many—we may boldly say in most—ways the secondary education, that is, the public school education, of this country, has shown itself to be capable of producing men fit to perform the duties of life. The results of the consumption of alcohol by these "children" have not, therefore, been very pernicious so far; and in spite of the liberty thus allowed, the tendency through all classes of society has of late years been markedly towards great moderation in the consumption of alcohol, a tendency not least noticeable amongst those who have been brought up at these great secondary schools that Sir V. Horsley abuses so roundly.

That this tendency should increase and spread in all directions, is the earnest hope of all who believe in the true principle of temperance; the spread of sound knowledge as to the evil of alcohol is one of the surest ways to bring this about. This recent Conference, and the Congress on School Hygiene that has recently met in London, will no doubt result in a wide diffusion of this knowledge amongst the rising generation; and if the teaching be given judiciously and without exaggeration, the benefit resulting to the race and to the nation will be immense.

A. M. D.

SOME OF THE CLINICAL ASPECTS OF PNEUMONIA. By DONALD W. C. HOOD, C.V.O., M.D.Cantab., F.R.C.P.Lond. London: John Bale, Sons and Danielsson, Ltd. pp. 117. Price 7s. 6d. net.

No disease requires more careful study on the part of the military physician than pneumonia. Osler describes it as one of the most widespread of all acute maladies, and, using John Bunyan's phrase, says it has become the "Captain of the Men of Death" of our time.

Dr. Hood's little book is the substance of clinical lectures and demonstrations delivered at the West London Hospital to post-graduates attending the practice of the hospital, and may accordingly be considered as an able and eloquent account of our present knowledge of the subject rather than a record of a new work or observation on the disease. It is, therefore, of great interest to the general practitioner, and will be read with especial pleasure by past post-graduates of the school in which Dr. Hood is such a distinguished teacher.

The book is divided into eight short chapters, seven dealing with various clinical features of pneumonia and one only with treatment. The author's remarks on pneumococcal septicæmia and "mixed infections" are particularly suggestive, and may offer an explanation of obscure cases occasionally met with in military practices abroad. The remarkable resemblance of some cases of pneumonia to abdominal disease is carefully considered, and the clinical conditions which have led to the operation for appendicitis being undertaken in cases of pneumonia, are well brought out. The peculiarities of influenzal pneumonia receive special attention, and the remarkable condition known as "Concealed Pneumonia" is forcibly impressed upon the reader's attention. The section on hæmoptysis in non-tuberculous individuals, as the result of apical pneumonia, is especially worthy of the attention of the military physician, as in-

accurate observation might in such cases readily lead to a healthy man being invalided out of the Service.

Dr. Hood's points are well driven home by a large number of illustrative cases, and his little book is eminently readable. It is admirably printed on good paper, but has one serious fault: it is too expensive. In these days, when such a monumental work as Osler's "Medicine" can be purchased for a guinea, seven and sixpence net is a big price for a small book of 117 pages.

R. J. B.

THE BRITISH SANATORIA ANNUAL, 1907-8. London: John Bale, Sons and Danielsson, Ltd. Price 5s. net.

We have received a copy of this handbook of 132 pages, which gives reliable information concerning private sanatoria and sanatoria that are free, or that take patients at reduced fees, or on special terms or conditions, for the open-air treatment of tuberculosis in the United Kingdom. The book is well got up and contains numerous illustrations.

Current Literature.

Statistical Report of the Health of the German Navy for the Year, October 1st, 1904, to September 30th, 1905.—This report, which is in three parts, is prepared in the Medical Department of the German Admiralty.

The first part gives an account of the diseases in the Navy, the amount of invaliding, the mortality, and the more important sanitary measures taken on board ship, on land, in home territory and in Kiauchou, with an appendix on re-vaccination in the Navy.

The second part contains special chapters on different groups of disease, such as a chapter on general diseases, one on tropical diseases, another on diseases of the nervous system, and so on. The appendices to this part contain a summary of the major surgical operations performed during the year, and an account of treatment of sailors in health resorts and watering places.

The third part is a series of tables showing the incidence of disease during the year on each ship and station month by month, with data for comparing different stations and different ships with one another.

In many respects the German report follows the lines of the British report on the health of the Navy, but it gives fuller details.

The average strength of the German Navy for the report under review was 40,432 men, including officers and men afloat and on shore in Kiauchou. The only omission is 749 officers and men of the Naval Expeditionary troops in South-west and East Africa. The admission-rate for disease was 366.2 per 1,000 for men on board ship, 589.1 for men on shore, and 462.4 for both classes. The sickness on shore has increased, but the other figures show a decline on previous years. Kiauchou showed, however, a high admission-rate, namely, 834.4 per 1,000.

The report compares these figures with those of the British Navy, which in 1904 had an admission-rate of 754.7 per 1,000, and in 1905 one of 734.71.

The average constantly sick was 27.0 per 1,000, and the average number of days under treatment 20.7 (*i.e.*, days of duration of disease).

A graphic chart shows a marked and steady improvement in the health of the German Navy during the previous ten years. At the beginning of the decade the admission-rates, both on sea and on shore, were as high as 830 to 870, and the combined rate 850, or about half what it is now.

The death-rate for the year 1904-05 was 2.8 per 1,000, as compared with 3.9 per 1,000 in the British Navy.

The invaliding-rate was 47.0 per 1,000, by far the greatest cause of invaliding being heart affections.

There was nothing special to note in the report with regard to outbreaks of epidemics or prevalence of tropical diseases. Infectious diseases, including enteric fever, occurred from time to time, but in small numbers, and were kept well in hand. The incidence of malaria, dysentery and tropical diarrhoea was insignificant, but a long account is given of quinine prophylaxis, &c., of the former.

With regard to nervous diseases there is a marked and steady increase in neurasthenia. The engine room ratings were affected most.

The incidence of venereal disease in the German Navy was 62.4 per 1,000 of strength, showing a steady decrease since 1895-96, when it was 137.2 per 1,000. The report gives a table of comparison between these results and the venereal disease incidence in the Germany Army and British Navy, the latter being 108.8 in 1904 and 121.4 per 1,000 in 1905, and the former 19.6 in 1903-04.

The section dealing with sanitary measures does not detail anything of a special character, but one gathers from it that the arrangements for sufficient air space and feeding are most satisfactory, that the comfort of the men is well looked after, and that measures for supplying pure water, for preventing infectious disease and for disinfecting are not neglected in the German Navy.

W. G. M.

Hysteria in Military Life.—M. Conor, *Médecin-Major 2^e Classe*, Assistant to the Principal Medical Officer of the 3rd Army Corps in France, has an article, "De l'hystérie dans l'armée," in the May and June numbers of the *Archives de Médecine et de Pharmacie Militaires*, in which he points out that hysteria in the male is no longer a rare occurrence clinically, although in 1816 Villermay stated that, "*l'homme ne peut être hystérique puisqu'il n'a pas d'utérus*." In an historical review, M. Conor refers to many important articles on the subject, not only in France but also in Germany, Holland, Russia, Spain, Italy and Belgium.

The article is divided into five chapters, dealing respectively with the frequency of hysteria in the army, its etiology, its symptomatology, its diagnosis, and its medico-legal aspects.

The increasing frequency of hysteria is illustrated by a table, giving the statistics of soldiers invalided year by year, from 1879 to 1903, for hysteria and nervous affections generally. No cases were diagnosed as hysteria until 1888, but from that year onwards the numbers invalided under that heading have steadily increased from 0.06 per 1,000 to 0.42

per 1,000 of strength, while invaliding for nervous affections generally has increased from 0.73 in 1879 to 2.40 in 1903. Similar facts are observed in connection with other armies.

As regards the etiology of hysteria in soldiers, M. Conor commences by stating that heredity is the chief factor, and that exciting causes are only occasional factors. If the hereditary tendencies of the subject of hysteria are examined into, one finds almost invariably that he belongs to a family affected with nervous complaints. (It may be mentioned here, that so far as the British Army is concerned, we have not the same opportunities or possibilities of investigating the family history of recruits as have the army medical services of armies of countries where military service is compulsory; but previous history is none the less important in throwing light on the diseases that manifest themselves in the recruit shortly after enlistment).

M. Conor notes that the age at which hysteria develops is usually 15 to 25 years, and accordingly includes the age of the young soldier. Hysteria does not develop in soldiers of an effeminate appearance more than amongst men of the sturdy labouring class. M. Conor found it rarely amongst men of higher education and culture, but most frequently amongst workmen, coachmen, agricultural labourers, &c.

Exciting causes of hysteria in the army are noted in detail, with illustrative cases. The chief exciting cause is traumatism, next, injuries by lightning, and lastly, certain emotions produced by military life, such as fear of punishment itself, the effects of field service, venereal diseases, malaria, alcoholism, sunstroke, cold, &c. All these exciting causes are illustrated by clinical cases.

The symptomatology of the disease is well illustrated by cases showing convulsive forms, crises of pain without loss of consciousness, unconscious migration (*automatisme ambulateur*), paralytic phenomena, hysterical tremors characterised by polymorphism, defects of speech, dyspnoea crises, manifestations of pain, nocturnal incontinence of urine, trophic and vaso-motor affections, &c. A series of cases, collected from various sources, is quoted in connection with these symptoms.

In diagnosing hysteria, M. Conor depends upon examination into family history, previous medical history of the case, the manner in which the symptoms first appeared, and the constant areas of anæsthesia or hyperæsthesia. The importance of utilising these elements of diagnosis to distinguish between malingering and true hysteria is emphasised.

The medico-legal questions are questions that concern compulsory national service, and how far a recruit is to be exempt from service or not in consequence of hysteria. These questions do not affect service in the British Army to the same extent as in Continental armies; but in the latter they are of much importance and involve special technical training. Curiously enough, however, one of the cases cited in connection with the medico-legal aspects of hysteria in the army is taken from the British Army Medical Department Report for 1874, where a deserter was sentenced to imprisonment, afterwards became dumb, and was further punished on the assumption that he was malingering. He remained dumb for three years, and then recovered his speech suddenly and without apparent cause. M. Conor cites this as a case of undoubted military hysteria.

The article concludes with remarks to the effect that the army medical

officer should be practically instructed in nervous and mental diseases, that cases showing areas of disturbed sensations should be specially watched and information regarding them given to commanding officers, and that everything should be done to prevent hysteria by combating alcoholism, venereal disease, &c., and by giving the men proper reading rooms, libraries and entertainments in barracks, in order to cultivate their minds and distract their attention from themselves.

W. G. M.

Atoxyl in the Treatment of Syphilis.—An article by P. Salmon on the above subject appears in the *Compt. Rend. de la Soc. de Biol.*, Nos. 10 and 12, 1907.

On the analogy of the effects of atoxyl in trypanosomiasis, Salmon has tried it in syphilis, and had such remarkably good results that he regards it as as useful a specific as mercury. He gives intramuscular injections every second day for two or three weeks of 0.5 gramme (?) of atoxyl in 10 or 15 per cent. solution.

The daily press has given publication to the above and caused much excitement amongst the general public. In consequence of this Dr. Lassar has published a statement in the *Berlin Klin. Wochenschr.*, No. 16, to the effect that he tried atoxyl a year ago without results, and with considerable risk of causing poisonous symptoms.

W. G. M.

The Purification of Water on Field Service.—By Oberstabsarzt Bachr, Regimental Surgeon of the 36th (Magdeburg) Fusilier Regiment. (From the *Zeitschrift für Hygiene*, February 19th, 1907). Staff-Surgeon Bachr in this paper begins by giving a short historical sketch of the losses suffered by armies owing to water-borne disease. He then gives a very clear description of the various sources of water supply and the characters of each. He next discusses the value of chemical and bacteriological methods of analysis and their limitations. The portion of his paper which is of most interest to army medical officers is that describing the various methods of purification of water which have been experimented with in the German Army. The only chemical methods which he considers useful are those in which chlorine, bromine or ozone are the agents employed. By means of ozone a perfectly sterile water can be obtained. The firm of Siemens and Halske have constructed a portable apparatus for sterilising water by means of ozone, which was supplied to the Russians for use in Manchuria in the late war. The apparatus was, however, captured by the Japanese before it came into use. The diagrams which illustrate Staff-Surgeon Bachr's paper give a clear idea of the process, which, however, appears too complicated for use on service. The raw water is pumped through a strainer to a receptacle, from which it is passed through a coarse filter. It then passes into the sterilising chamber, where it is subjected to the action of ozone, prepared by pumping air, dried by passing over chloride of calcium, into an apparatus in which ozone is produced by electrical action.

The field apparatus is carried on two waggon, each drawn by one horse; the weight of each wagon is about 2,000 lbs. One wagon carries: (a) A benzine motor; (b) dynamo and battery; (c) a pump; (d) a small fan for supplying air to the ozone apparatus; and (e) boxes

with reserve parts. The other waggon carries: (a) Siemen's apparatus for ozone production; (b) an electric transformer; (c) three coarse filters; (d) the sterilising chamber, made of galvanised iron and filled with gravel or pumice stone; and (e) boxes with spare parts.

The apparatus delivers from 437 to 755 gallons per hour. So far as bacteriological tests go this apparatus has given excellent results, but no information is given as to its practical value for military purposes. Staff-Surgeon Bachr next discusses the value of field filters, and points out the practical difficulties met with, viz., the slow delivery of water by efficient filters and the readiness with which they get choked.

He next describes methods of sterilising water by heat: the apparatus first mentioned is on the heat-exchange system, of which the Waterhouse-Forbes apparatus is a well-known type. According to Staff-Surgeon Bachr, experience on active service has shown that this type of steriliser possesses grave drawbacks. The chief defects are that water, if muddy, must be clarified before being sterilised, that the sterilised water has the unappetising taste of boiled water, and that the delivery—40 litres per hour—is not rapid enough for the necessities of the troops. The Medical Department of the German Army has accordingly had a water sterilising apparatus constructed which is free from the defects mentioned. This apparatus has been devised by the firm of Rietschel and Henneberg. The conditions which the Medical Department required to be complied with were:—

- (1) A normal delivery of 300 litres per hour.
- (2) Absolute sterilisation of the water.
- (3) The water delivered not to be more than 5° warmer than the raw water.
- (4) The water to be clarified.
- (5) The water delivered must be aerated.
- (6) Simple means of getting rid of mud and fur in the boiler to be applicable.
- (7) Preliminary sterilising of all parts which come in contact with the water must be possible.
- (8) A maximum weight of 2,860 lbs.
- (9) The frame of the waggon must be of the regulation field service pattern.

An apparatus fulfilling all these conditions was made by the above firm and tested at the autumn manœuvres of 1902, and also in the recent China Expedition. The 1904 model of this apparatus consists of: (1) The boiler for heating water; (2) the cooler; and (3) the filter for removing suspended matters and for aerating the water. The water is raised to a temperature of 105° C. to 119° C., under a pressure of from .3 to .5 atmospheres. From the boiler the water passes into a cooling apparatus, worked on the heat-exchange principle. Finally the water passes through a rose, which distributes it in the form of spray to a filter composed of animal charcoal and pumice stone. Here also it is mixed with air drawn in through a germ-proof cotton-wool filter. As finally delivered the water is clear, sterile, aerated, and only 3° warmer than the raw water. The apparatus delivers 500 litres of water per hour.

Bacteriological investigations made by Proskauer and Schüder have shown that even such a contaminated water as that of the ship canal at Spandau is absolutely sterilised by this process. An improved model,

1905, does away with the necessity of manual labour for pumping, except at the very beginning of the process, by the provision of a steam pump. This model can be attended to by one man.

The same firm also makes a steriliser on the same principle for the use of small units or detachments. This steriliser weighs only 100 lbs., and can either be carried in one packet on a waggon, or in two packets on a pack animal, or by two men. It yields 100 litres per hour, and begins to deliver sterilised water eighteen minutes after being set in operation.

Surgeon-General Schian reports, with reference to his experience with these sterilisers in South-west Africa, that where they had to deal with clear water they worked in an absolutely satisfactory manner. He remarks that their construction was hardly strong enough for the conditions of campaigning in Africa, and also that it had not been possible to furnish every small detachment with one of them. The question of the provision of a sufficient number of these sterilisers in future is one for the military authorities to decide, but in Staff-Surgeon Bachr's opinion the problem of water sterilisation in the field is satisfactorily solved by their use.

J. G. McNAUGHT.

The Serum Treatment of Bacillary Dysentery.—(MM. Vaillard et Ch. Dopter, *Annales de l'Institut Pasteur*, April, 1907). In this paper, which is a sequel to one by the same authors published in the *Annales de l'Institut Pasteur*, May, 1906, an account is given of the results obtained by the serum treatment in 243 cases of dysentery treated during the summer of 1906. These cases fall under two categories: the first consists of 200 cases treated in various parts of France (Paris, Lyons, Bordeaux, Toulon, Toul and Brittany); the second consists of 43 cases of dysentery occurring in insane patients in the asylums at Maréville and Quatre-Mares.

In the first group of cases the mortality amounted to 5 per cent.; excluding, however, a number of cases which only came under treatment when in a desperate condition; the mortality amounted to 2 per cent. The authors consider that the results are extremely satisfactory, and quote statistics showing that the mortality of dysentery in different countries varies from 7 per cent. to 50 per cent. Not only does the use of serum lower the mortality, but it brings about an immediate alleviation in the symptoms, and a rapid recovery. The earlier in the illness it is employed the better. Cases of moderate intensity may only require doses of 20 cc., but in severe cases the serum should be given in doses of 50, 80, or 100 cc. In only one case did the serum produce symptoms (generalised erythema and fever) which necessitated its use being abandoned.

The second group of cases consisted of 16 insanes treated at the asylum of Maréville, and 27 at the asylum of Quatre-Mares. Among the former there were two deaths, and among the latter five deaths. The serum was not given in sufficiently large doses in the most severe cases, but the doctors who treated the patients report an immediate and rapid improvement in the majority of cases.

The authors sum up their conclusions as follows: The serum should be used as soon as possible after the onset of the illness, in doses proportionate to its intensity. In dysentery of ordinary type 20 cc. or 30 cc.

may be sufficient; but in severe attacks it is necessary to inject 40, 60, or 80 cc., or even more, at once, and repeat the injection the next day. If the intestinal symptoms do not then sufficiently abate, the use of the serum should be continued in decreasing doses till the number of stools is reduced to a few in the twenty-four hours.

Not only is the serum effective from the point of view of cure, but by cutting short the disease it lessens the period during which infection may be spread. The authors advise that in regions, such as Brittany, where dysentery is epidemic, the serum should be used as a prophylactic.

J. G. McNAUGHT.

Correspondence.

HOUSE FLIES AND THEIR WAYS AT BENARES.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—With regard to my paper published in the August number of the Journal, on "House Flies and Their Ways at Benares," will you kindly add a note to the effect that, since that paper was written, I have obtained *Musca domestica* from larvæ bred in an artificial latrine containing human excreta mingled with earth. My observations so far lead me to believe that the various flies, intimately connected with man and his surroundings, which breed in ordure, affect mainly fresh ordure; that stale manure is of little account as food for the larvæ of such flies.

I am, Sir,

Yours, &c.,

F. SMITH,

Major, R.A.M.C.

Benares,

August 5th, 1907.

WANTED, AN EXPLANATION.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—In a letter in the August number of the Journal, *re* the absence of mosquitoes at Sarant Wadi, Colonel Forman asserts that he knows of no place on the plains of India, other than Sarant Wadi, where one can sleep without curtain or punkah throughout the year; and he gravely doubts if such a place exists.

My experience of India is almost entirely confined to Madras and Burma, yet I know of at least one such place in Southern India, viz., Malapuram, in Malabar. I served in that delectable place for about thirteen months (1900-1901), and during that time no one while in the

station ever used a mosquito net, or ever required one. I do not assert that there were no mosquitoes, but, at any rate, they were so few in number as to be treated as not existing. Other officers of the Corps who have served at Malapuram may have a different story to tell, but the fact remains that for over a year I slept in comfort without either a mosquito net or a punkah, and without suffering from malaria. This was done deliberately on account of the greater comfort, and was not due to ignorance of the rôle of *Anopheles* in malarial fever.

The explanation in this case was simple. The barracks, officers' quarters, &c., are beautifully situated on high ground, with good surface drainage, and the whole place was kept in "apple-pie" order. The difficulty was to find any places where mosquitoes could breed, and many a weary hour I spent in futile searching for larvæ.

I am, Sir,

Yours, &c.,

J. COWAN,

Captain, R.A.M.C.

August 26th, 1907.



Journal
of the
Royal Army Medical Corps.

Original Communications.

ADDRESS BY THE PRESIDENT, SIR HERBERT ELLIS,
K.C.B., K.H.P., DIRECTOR-GENERAL OF THE MEDICAL
DEPARTMENT OF THE ROYAL NAVY, AT THE
OPENING MEETING OF THE UNITED SERVICES
MEDICAL SOCIETY, ON OCTOBER 10TH, 1907, AT
THE ROYAL ARMY MEDICAL COLLEGE, LONDON.

WE meet here to-night to inaugurate our New Society, and, as its first President, it has fallen to my lot to be the first to address its members. I could wish that the task had fallen into more capable hands, but just as I felt that as the Head of the Medical Department of the Navy, which Service is accorded precedence among the combatant Services of the Empire, it was incumbent upon me to accept the honour of President accorded to me, so I felt it equally incumbent upon me, however reluctant I might be on account of my shortcomings, to open this meeting to-night with a few brief remarks.

It seemed appropriate that this first paper should take the form of suggestions as to the objects and uses of the Society and its possible developments, and as such I offer it to your consideration, trusting that it may draw forth from you still other ideas and proposals, that may serve to clothe the dry bones which I offer you with a quickening life that may successfully launch the "United Services Medical Society" on a long career of usefulness and prosperity.

It is hardly necessary, I think, to do more than allude very briefly to its origin. The suggestion for its formation came from

the Army Medical Department, and when Sir Alfred Keogh approached me on the subject I was only too pleased to second his efforts and to promise them my support and cordial co-operation. And here I should like to say that it is of the utmost importance that all its members should recognise that this Society has nothing official about it.

It was in the nature of things, I think, that the early pour-parlers should take place between the two Head Offices of the Medical Departments of the Navy and Army, because their central position presented facilities for taking the first steps for calling together members of the different Services to consider the question, and in the same way it was, I think, expedient to be prepared with a proposed constitution for the Society in order to save time when we met together. Now, however, that a start has been made, it is very desirable that all connection with our Headquarters in London should be forgotten, and that the Society should trust entirely to its own life to guide and regulate its course.

As you are no doubt aware, similar societies exist in other countries, and I may especially mention one, the Association of Military Surgeons, which exists in the United States, and to the annual meetings of which naval and military medical delegates from this country have been sent during the last few years. This Association publishes a journal, which you have probably seen, in which its transactions are reported and the papers read before it published. Then there is the Société de Médecine Militaire Française with our neighbours across the sea, which issues a fortnightly bulletin of its meetings and discussions, and which assembles twice a month. It is a matter which, I think, it would be well for this Society to consider in the near future, whether a similar publication might not be undertaken by it, but just at present I think it would be wise to adopt the motto "*Festina lente*," and feel our way gradually towards the accomplishment of more ambitious aims.

With regard to the objects and uses of this Society it will, I think, be generally conceded that this attempt to bring together the medical officers of the different Services by periodic meetings at which they will not only become socially acquainted with one another, but at which they will be able to exchange ideas, retail their own experiences and discuss matters of common interest to them all, is one likely to be attended with good results.

In union lies strength, and the more we combine the more likely we are to make our voices heard and to speak with authority in

those special fields in which our work lies, and where we ought to be, if not the only, at any rate the paramount, authority.

We are all, I am afraid, when the limit of our vision is a restricted one, and our work concentrated more or less in one direction, as it must very often be, inclined to become didactic, to live in a groove and so to be in danger of losing sight of that broader and larger field in which our fellows and our co-workers may be toiling, where the conditions may be very different, the environment strange to us, the problems for solution more complex than those one or other of us may have to face in the daily round in which his duty lies. We have to recognise that the perplexities which confront each individual among us, manifold as they may be, can be better understood and overcome if they are looked upon as fragments only of that great puzzle how to maintain in peace and in war the health of the sailor and the soldier, so that he may be ever ready, both physically and mentally, if required, for the special task for which only he has been called into existence.

The formation, then, of this Society is an attempt on our part to co-ordinate the efforts of, and to bring together, the officers of the Medical Services of the Navy, Army, Colonial and Auxiliary Forces, so that they may in divers ways lend mutual assistance to one another and supplement the experiences of each other, so that we may be all the better able to render service to our world-wide Empire, whether it be our fortune to serve in the home or the Indian Armies, in the forces of our great dependencies, or in those fleets that change their domicile with every passing shadow of European politics.

Let me illustrate for a moment what I mean by a brief survey of some of the experiences that fall to the lot of the medical officers of the different Services. Take the naval medical officer first and his experience of life afloat. He finds himself entrusted with the care and well-being of men who with himself have as their home an unstable tenement which the necessities of war have converted into anything but a model dwelling place from a health point of view. It is constructed of metal, with its disadvantages of being cold in winter and fiercely hot in summer. It is divided into compartments which are antagonistic to true hygiene, and where the greatest efforts of the constructor fail to supply them all with a sufficient interchange of fresh air with foul. Ever-burning furnaces heat the air unequally in different parts of the ship, and the humid exhalations of the crew, steam and sometimes condensation, saturate it with moisture. Certainly not a model dwelling-house you will

say, and it is only because the most scrupulous cleanliness born originally of necessity, but which has now become a habit, is observed, and because strict attention is paid to such means of ventilation as are provided, that a fair average of health is maintained among the crews of our men-of-war. These crews, too, are often carried in comparatively brief periods of time by the exigencies of the Service through abrupt changes of temperatures, so that the climatic conditions of their lives are constantly changing. Take again the experience of the naval medical officer in dealing with zymotic disease afloat. At times the isolation, the self-containment of a vessel, is its safeguard against such diseases, and precautions can be more easily taken than they can be ashore; but, on the other hand, at times this very isolation is a drawback when once zymotic disease has gained a footing on board. It may not be possible to get rid of those stricken down, and such isolation as is possible has to be carried out on board, taxing all the resources and ingenuity of the medical officer. Contrast, too, the different conditions of warfare ashore and afloat. Under the former men may be exhausted with marching and exposure, and their rations may be scanty and insufficient, while the bluejacket may get up from a hearty meal to fight a desperate battle, and sit down to an equally hearty one at the close of it. Consider, too, the preparations for attending upon wounded. In the one the dressing stations and field hospitals in comparative safety behind the fighting line, in the other they are perforce in the midst of the fray, and the surgeon has to do what he can in the midst of bursting shells and the alarms of fire and of wreck.

I have often thought, too, what a wealthy field of observation is very often presented to a naval surgeon in the course of a year's service or less on a foreign station such as the China one. I have myself—and many others have done the same—passed in that space of time from among the Malays and Chinese of the Straits Settlements, to the Dyaks and other native races of Borneo, the inhabitants of the Sulu and Philippine Islands, have encountered wandering Tartars in those vast Russian territories that stretch for hundreds of miles to the north of Vladivostock, and have come in contact with the teeming populations of Chinese cities as well as those of our Japanese allies. And varied as are the races, equally varied are the types and forms of disease to be met with in such journeyings. Pigeon-holed in the Department over which I preside are gleanings, the fruits of such wanderings, made far back into the years that are passed. Some there are of original

interest; some perhaps of little value. From time to time some eager enquirer into some disease obtains permission to investigate them, but for the most part what is good in them is like the talents hid in a napkin, and I rejoice that now this Society can offer naval medical officers an opportunity of retailing their experiences and exchanging them with members of the other Services. It is true that the British Medical Association, which has worked hard to improve the conditions of medical service in the Army and Navy, offers officers who are members at its annual meetings opportunities to read papers and enter into debate on questions that immediately concern them, and I have read with much interest the very full reports that its journal has published of papers read at the last meeting at Exeter. I think, however, that our monthly meetings, if they prove a success at a fixed and central place of assembly such as this is, will afford still greater opportunities to us.

And if the experiences of the naval medical officer are gleaned from the littoral portions of the globe and the islands that stud the surface of those many seas where the White Ensign flies, consider how his *confrère* of the Army can bring to complement his knowledge, experience of disease, and the conditions that produce it, gathered very often from the interior of vast continents and regions far away from the well-trodden pathways of the world. The military expeditions that from time to time devolve upon this country have led him during his Indian service through the passes of the North-Western frontier among the warlike races of Afghanistan, where we can already perhaps perceive the dawn of a western awakening. He has crossed the Indus into the wild valleys of Chitral, and at a still later date has breasted the snowy ranges of the Himalayas to wander among the sacred shrines of Lhasa, and to view the strange people of Thibet and their still stranger customs. In peace he has sweltered perhaps in the plains of India, confronted with the problem of how to preserve the health of British soldiers in a climate to which they were not born, and surrounded by a dense native population from which ever and anon plague or cholera exact a heavy toll and constitute an ever-present menace and danger to the white man.

I do not forget, of course, in making these remarks, the Indian medical officer, who belongs to a Service that draws its recruits from among the most promising alumni of our medical schools, and which is renowned for its distinguished men both in the present and the past, whose brilliant discoveries in the pathology and elucidation of oriental diseases, and whose researches

among the highways and byeways of those sciences that hang upon the skirts of medicine, have shed a lustre upon it that it would be hard to surpass. This officer shares the toils and the trials of his colleague from the home Army both in war and in peace. He brings, however, something more to our councils and our debate. His experiences of disease are constantly gathered from the teeming native races among whom his lot is cast. His work among the civil population gives him a special insight and a knowledge of the conditions of its life. In dealing with epidemics he has to take count of native prejudice and caste distinction and of wild and fantastic superstitions. In the field of surgery he deals with some special diseases on a scale which renders their statistics almost unapproachable by any that one individual in this country or, indeed, in any other country could supply. He can contrast the incidence of disease as it effects respectively the flesh, or the fish, or the vegetable feeders of the country of his adoption. In the varied appointments which the Indian Government often think fit to entrust him with, appointments which we do not always associate with the practice and principles of medicine or surgery, he gathers new experience, new food for thought, new ways of looking at questions which must enrich the fund of knowledge which he has to impart.

I remember when reading the autobiography of that distinguished Indian medical officer who has so recently passed away from us, Sir Joseph Fayrer, how he mentions the multifarious duties that fell to his lot when he first became Residency Surgeon at Lucknow. Besides being superintendent of all charitable institutions and a public garden, he was postmaster and an honorary assistant resident. I do not know if at the present time so many dissimilar offices meet in one person, but I do know that the Government of India still not infrequently turns to its medical servants to fill places where trust and common sense and knowledge of the people and wise administration are required more, perhaps, than medical lore and the cult of healing. And here I would say that my attention was drawn a short time ago to an article in the July number of the *Indian Medical Gazette*, which deals with and comments very favourably upon the formation of this Society. It contains a paragraph, however, which criticises the objects of the Society, as set forth in one of the preliminary circulars that were issued, as of too restrictive a character to "attract men of the Indian Medical Service," and advises a widening of their range.

I do not think I should pass this by without comment, and I

feel sure that I am voicing the feelings of the promoters of this Society when I say that it was not their intention within the limits of a circular, which was necessarily brief, to indicate precisely the wide field of subjects that might be traversed by the papers that will be read from time to time at these meetings. We shall welcome, to quote the article, "the study of diseases of the tropics, the incidence of diseases of temperate climates among Europeans in the tropics and among the natives of those countries, the problems of municipal and rural sanitation, and, above all, the study of surgery." The members of the Medical Departments of all the Services are restricted to no narrow specialism, but are cosmopolitan in the interest they take in the domains of medicine and surgery, of hygiene and sanitation. I do not, therefore, think that any Indian medical officer need be deterred by any fear of the limitation of subjects from joining our ranks.

We are separated from our Colonial brethren who serve the military forces of their States by leagues of ocean travel, however near we may be drawn by bonds of common interest and consanguinity, but we hope, in spite of this, to welcome them from time to time at our monthly gatherings and to hear how they read the answers to the questions that perplex us. The light they will often bring will be that gained by permanent residence and long familiarity with the conditions and diseases of these different countries, which we, perhaps, have only seen and theorised upon as passing travellers, or at best as temporary sojourners.

And what special wisdom will the medical officers of the Auxiliary Forces at home bring us at our meetings? They will bring us chiefly, I think, an impartial criticism to bear upon our discussions, the criticisms of citizens and civilians. Those of us whose lives are spent in the regular Services of the Crown are all in need of this at times. We cannot free ourselves altogether from red tape and certain preconceived ideas. Our lives have lain more or less amid, or beneath, the folds of the Union Jack or the White Ensign; our society has been that of dwellers in the great garrisons and arsenals of our country, in this country and abroad. Unconsciously, we have been influenced by their hereditary shibboleths, and we desire a freer criticism than we can find among ourselves.

Such, gentlemen, is a brief indication of how we may supplement each other's experience and form a common fund of knowledge. Those of us who belong to the Sea Service, and whose active life has been, to a great extent, spent upon the waters, can speak with some authority upon such subjects, on the effects of rapid change

of climate on the human body, of life in confined spaces, ill-lit, ill-ventilated, and often, as I have said before, intensely humid and hot; of the engendering, or, I should rather say, the encouragement of tuberculosis and of the development of other diseases and habits of body produced by such an environment. We can discuss caisson disease and its interesting pathology, life in submarines and its risks to health, the influence of heavy gun fire and its deleterious effects, and a host of other occupations more or less accompanied by attendant ills; and last, but not least, we should be able to form some estimate of how a very strenuous and active life tells in this neurotic age upon the *personnel* of our fleets, a subject of vast importance, for if it be true, as some suspect, that the ups and downs of life are borne with less philosophy and equanimity than of old, that nervous breakdowns are more common and mental strain less easily sustained, it brings us face to face with the momentous question, whether we shall be able, in the days that are coming, to still maintain our position in the van.

Those of us, again, who belong to our Land Forces will, on the other hand, talk of the hygiene and sanitation of large camps in peace and in war, of their safeguards and medical control, of ambulance work and the transport of wounded in the field, of plague and cholera, and many another oriental disease, the ravages of which may have crossed their path, but which their naval brethren may have steered clear of altogether or only encountered sporadically.

I will now, gentlemen, throw out a few suggestions and indications as to the lines this Society might follow in the future, with a view to obtaining your opinion upon them, whether it be favourable or otherwise. In the first place there has lately come into being, in London, a Royal Society of Medicine, which has amalgamated most, I believe, of the other medical societies, and which has established sections which cover the same grounds as those formerly embraced by those societies which have now become extinct. It has been suggested that this Society of ours might appropriately form a section of the Royal Society of Medicine, but putting on one side the fact that such a step would have to meet with the approval of the Council, and probably the members of that Society, there are reasons why I think, at any rate at the present stage, any movement in that direction is impracticable. First, there is a financial objection. We have placed the annual subscription to our Society at a low figure tentatively. Should a union in the future take place between the societies, the members of our section would have to contribute one guinea a year to that

section and, as I read the rules, three guineas annually, and in addition, if joining after March 1st, 1908, a further admission fee of two guineas. Now, I think you will agree with me that that is quite prohibitive, and that we should fail entirely, if such a step was proposed, in carrying over with us the bulk of our members. Then there is yet another reason why I think no necessity at present exists for moving in this direction. The reasons for the amalgamation of the great medical societies that had their headquarters in London were most excellent and weighty. If they had not been, and had not met with very general approval, such an amalgamation would never have taken place, but these reasons do not obtain with us, or if some of them do, it is only in a minor degree. We stand rather apart from the considerations that govern our professional brethren in civil life. We, who serve in the militant Services of the Crown, have already a common bond of union, and form a not inconsiderable body, and my own opinion is that it would be well, at present at any rate, to preserve our independence as a Society, and to see if it be possible to accomplish certain definite aims which we should hold in view. I think our first aim should be to enrol as members of our Society as large a number of officers as possible; indeed, we would wish to attract to it every medical officer who holds a commission in His Majesty's naval and military forces. If this could be done, success would, I feel certain, be assured. The next step, and I feel it a very necessary one, would be to start local branches of the Society abroad, wherever from the size of the station and a sufficiency of members it might be possible. I say abroad, because I know there are some members who would wish to see such branches established at our great naval and military stations at home. Now I for one am very strongly of opinion that, at our present stage, it would not be politic to do this. It would sap the strength of our central organisation before that strength was assured. We may be able to consider it at a future time. No doubt there will be at times a difficulty in officers who are non-resident in or near London attending these meetings as often as they might desire, and I know this difficulty will specially apply to members belonging to my own Service; but in spite of this, I do think it very desirable at the start that all papers to be read, that have been prepared by officers in England, should be read here either by them or by proxy. By the kind permission of the Director-General of the Army Medical Service, and by the courtesy of the Commandant, we are permitted to meet here at the Royal Army Medical College, which presents facilities suited to our wants and not to be found

elsewhere. The length of papers should, I think, be as a rule limited to half an hour, and might on occasions be still shorter, so that time may be left for criticism and debate, and our proceedings may well be brought to a close, as they are to be to-night, by lantern demonstrations or the exhibition of objects that are of interest to us.

Well then, gentlemen, having obtained a full roll of members and having established our central place of meeting in this metropolis and our branches abroad, what is there that still remains to be done? I venture to think it will be one of the strongest of the links that are to bind us together if we can carry it out. Arrangements have been made for the present for publishing the papers read at our meetings, and the discussions that follow them, in the pages of the *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, but it is very desirable, I think, to regard this privilege that has been accorded us as a temporary one only, and that we should aim at the publication of our papers and transactions in a periodical of our own to be issued, if not monthly, at any rate quarterly. Remember that our Indian members are practically expatriated during the whole of their active service careers except when they are enjoying their well-earned furlough, and that our Colonial members will be also absent except when they are on a visit to this country, so that I think it is essential that we should be knit together by some such bond as this, which would be an outward and visible sign of our union. The difficulties in the way are chiefly financial, and before embarking upon such a project it will be necessary to consider ways and means, and to see what response will be made by officers to the invitations that have been sent them to join the Society. I hope that at the next meeting of our Committee in December we may be able to go into this matter and come to some definite conclusion regarding it.

These then, gentlemen, are the few remarks that I have hastily put together and ventured to make to you at this first meeting of our Society. I must ask your indulgence for their crudeness and want of elaboration, but if they have suggested to you new ideas of the means we should take in framing a strong foundation upon which we can build, they will have served their purpose.

DISCUSSION.

Major HARRISON, R.A.M.C., was in favour of the Society having its own Journal, and thought that it would be an inducement to officers to join.

Lieutenant-Colonel MACPHERSON, C.M.G., R.A.M.C., was opposed to

the multiplication of journals, and was in favour of the Society's transactions being published in the JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

Colonel Sir JAMES CLARKE, Bart., C.B., R.A.M.C.(Mil.), thought there should be one Journal, and would like it to be the Journal of the Society.

Lieutenant-Colonel FREYER, I.M.S., wished to oppose amalgamation with the Royal Society of Medicine, and was of opinion that a quarterly or monthly Journal would be acceptable to members scattered over the world.

Inspector-General PORTER, C.B., R.N., dwelt on the social and professional advantages of the Society, and eulogised the Netley School.

Colonel JAMES, R.A.M.C., would like to have a Journal, and suggested the taking of a vote on the subject.

Fleet-Surgeon HOME, R.N., considered that it would be anomalous to have to turn to the *British Medical Journal* to find out what was happening in the Society.

The PRESIDENT pointed out that it would be irregular then to take any vote on the subject of starting a Journal, and by general accord it was agreed that the matter should be considered at the next Council Meeting and brought before the members at the Annual General Meeting.

A vote of thanks to the Chairman was proposed by Colonel Sir JAMES CLARKE, Bart., C.B., and seconded by Lieutenant-Colonel Sir HAVELOCK CHARLES, K.C.V.O., I.M.S., and the proceedings terminated with an exhibition of objects of interest in the Pathological Laboratory.

HEART DISEASE AND THE SERVICE.

BY LIEUTENANT-COLONEL R. J. C. COTTELL.
Royal Army Medical Corps.

I HAVE been asked by the Director-General, Army Medical Service, as I have somewhat exceptional opportunities as Deputy-Surgeon at the Royal Hospital, Chelsea, to inquire into the after histories of men invalided from the Service for heart lesions, and to get, if possible, some information of a practical nature as to whether any of the men at present being invalided for this cause could not be retained with advantage to the Service, especially as so many of them have to take up a laborious occupation in civil life, which, judging by the after yearly Medical Reports on many of these men, they appear well able to do. As regards the duties of a soldier at home, they must be much less trying than the work and general conditions of life that he would be exposed to in any arduous civil occupation. Therefore, it would appear that in certain cases it would also be beneficial to the man himself to remain in the Service. In other words, can men who have a simple heart lesion, with no general symptoms, be retained in the Service, say for duty at home, or is it best to do as we are doing, that is, discharging them as soon as possible?

First let me say that the opinions and statements in this report are entirely my own, and that I am therefore alone to blame for, perhaps, many foolhardy remarks.

I have arranged the report as follows: a short explanation of the means I have had of obtaining information, and of the various terms used to express the position of invalids in after years with regard to their several pensions. The latter will explain why only one set of pension lists, *i.e.*, the "conditional," has been of any real service to me in this inquiry. After the above, I proceed to try and explain some tables, and to do this the more easily I have put what I wish to say in the form of "notes" to each. Following on the tables and notes I have added a "summary" of what is contained in the notes, and other remarks of a more general character in reference to invaliding. I should like to have made this inquiry extend over a period of ten years, and to have made further notes on all the documents that I have examined, but I found that month after month was flitting by and my report getting more and more out of hand. I have therefore closed my inquiries after having

examined the invaliding documents for a period of seven years (1895 to 1901 inclusive) and have only gone into the "Conditional" cases (1,280) thoroughly, of men suffering from "V.D.H." and "D.A.H." I have, however, given the total cases (5,144) in some of the tables and have tried to glean some useful facts from consideration of them. In speaking of the total invalids for "V.D.H." and "D.A.H." one must also remember that there are other sources of loss to the Service from these diseases; I mean deaths in military hospitals and the losses due to discharges under the "Three Months'" ruling. The latter losses can be taken as strengthening my remarks on recruiting. As will be seen by the tables a certain number of recruits under three months' service do get regularly invalided and so their documents find their way to Chelsea.

I must here apologise for not having kept strictly to the original question; the fact is, I found it to be an involved one and so, to get any useful decision on it, I had to consider many almost side issues.

I have been enabled to carry on this inquiry entirely through the courtesy and continual kindly help of the Assistant Secretary (W. T. Hughes, Esq., I.S.O.) and his staff, of this hospital and I feel that my best thanks are due to them.

Every case of an invalid from the Service is entered into carefully by the Commissioners of the Royal Hospital and it is then decided whether it is one entitled to pension or not. If not the case is "rejected" as having "no grounds" for the grant. If entitled to a pension, the question as to whether it shall be "permanent," "conditional" (*i.e.*, one that may or may not have to be renewed from year to year), or "final" (usually one that gives the man a daily sum for a definite period—generally one year, the pension then ending).

The cases given a "permanent" or a "final" pension are as a rule not again considered.

The "conditional" pension lists are therefore the only ones that can give us any information of the cases in after years.

"Conditional" pensions may be continued from year to year, or altered to "permanent," "final," or "rejected," as having "no further grounds," according to the medical progress of the case, the man's general circumstances and character. Every "conditional" case is examined (yearly as a rule) either by a medical officer or by a board of medical officers, as to the man's progress to recovery or the reverse since the former examination, and it is

the information contained in these medical reports that I have had at my disposal.

At the outset I must state that because a man does not get a pension, it does not mean that the disease in his case was of a trivial nature. Most of these cases are not eligible for a pension by Royal Warrant, otherwise they would probably have obtained one.

Unfortunately, being only able to take the "conditional" cases means a loss for the purposes of this report of nearly four-fifths of the total invalids for the years under consideration, though the two years (1900 and 1901) greatly increased the "conditional" cases. This latter was partly due to the war, but also due to a different method of dealing with heart cases, it being more and more recognised that many of the men greatly improved in after years, and so the pension list could possibly be lessened if time were given for further medical reports to come in.

TABLE I., SHOWING THE SERVICE OF MEN AT THE TIME OF INVALIDING FOR "V.D.H." AND "D.A.H."

"V.D.H." 3,424; "D.A.H.," 1,720; total cases, 5,144.
1895 to 1901 inclusive.

Service	"V.D.H."								"D.A.H."							
	1895	1896	1897	1898	1899	1900	1901	Totals	1895	1896	1897	1898	1899	1900	1901	Totals
1 to 3 months	7	3	..	1	3	6	6	26	1	1	4	2	1	3	5	17
3 " 6 "	16	14	8	11	12	36	44	141	3	2	4	5	7	16	10	47
6 " 12 "	51	64	33	50	50	150	206	604	14	20	17	30	29	50	86	246
1 " 3 years ..	134	145	92	115	80	153	326	1,045	65	178	72	96	65	56	171	703
3 " 6 " ..	84	94	93	108	90	97	165	731	43	55	63	85	56	55	94	451
6 " 14 " ..	34	48	41	68	90	170	261	712	8	10	6	16	12	68	93	213
14 years and over	9	13	10	21	13	40	59	165	..	2	4	..	2	20	15	43
Totals	335	381	277	374	338	652	1,067	3,424	134	268	170	234	172	268	474	1,720

Notes to Table I.—This table shows the large number of men that are lost to the Service by reason of some heart lesion, and the need of some possible reform to protect ourselves from this waste of material and consequent expense.

The large proportion of young soldiers should be noted, who have practically undergone no military hardships and of whom I think it may fairly be said, a large proportion enter the Service suffering already from disease, or at any rate some weakness, of the heart, tending to lead shortly to definite lesions. Many of

these men will admit having had rheumatic fever, or "rheumatism," prior to enlistment. Over one-fifth of the total cases invalided for "V.D.H.," it will be seen, are men under one year's service; and again, over half of the total cases are men under three years' service. Personally, I think more careful examination of recruits is necessary, and all doubtful cases, especially in weakly lads, should be followed up and examined, if necessary several times, and, if possible, under different circumstances, so that, as far as we can guarantee such a thing, our soldiers may start their service free from any heart weakness or more definite lesion.

Note also the rapid increase of invaliding in 1900 and 1901, caused no doubt by the South African war. The war more than doubled the numbers actually serving, and besides produced that continual strain and excitement and that want of sufficient rest, so fatal as a cause of heart lesions.

I feel that I must not hide another cause of serious invaliding during especially 1900 and 1901; I refer to a certain—shall I call it want of experience, shown by certain civilians employed as recruiting medical officers at that time. I found that over 130 of the total invalids for "V.D.H." (256) under twelve months' service for the year 1901 were examined by civilian medical men.

It will be seen that for "D.A.H." also the figure for invaliding under twelve months' service is almost up to one-fifth, though I do not here think that defective medical recruiting is so much at fault as the early training, together with the change of conditions surrounding the young soldier.

TABLE II., SHOWING THE TOTAL INVALIDING FOR "V.D.H.," "D.A.H." AND ANEURYSM. ROYAL ARTILLERY COMPARED WITH "OTHER CORPS," 1895 TO 1901.

		1895	1896	1897	1898	1899	1900	1901	Totals	Average per- centages to average strengths in the Army, 1895—1901
"V.D.H."	Royal Artillery	57	59	38	42	57	86	155	494	·172 per cent.
	Other Corps ..	278	322	239	332	281	566	912	2,930	·175 "
"D.A.H."	Royal Artillery	14	22	19	23	18	44	68	208	·072 "
	Other Corps ..	120	246	151	211	154	224	406	1,512	·089 "
Aneurysm	Royal Artillery	1	—	2	1	2	—	—	6	·0003 "
	Other Corps ..	1	8	3	5	2	6	14	39	·0022 "
All corps ..	Totals ..	471	657	452	614	514	926	1,555	5,189	·25 per cent.

Notes to Table II.—I have compared the Royal Artillery with "Other Corps" in this table, to show that that branch of the Service is not more liable to heart lesion than any other; indeed,

if anything, slightly less liable (judging from invaliding alone). I think it is frequently forgotten, when speaking of the bad effects of the sudden heavy strains the Royal Artillery soldier is undoubtedly exposed to, that his infantry comrade has also to undergo the strain of carrying ammunition and kit, supported by straps around his chest and abdomen, besides carrying his rifle, and then he has long, weary and exhausting marches and frequently a want of sufficient rest at the end of them: surely all these have as bad an effect on the heart and large vessels as any of the shorter and heavier strains required of the gunner.

TABLES III. AND IV., SHOWING IN 1,150 CASES (FROM THE "CONDITIONAL" PENSION LISTS, TAKEN *seriatim* (1) 1895 TO 1901) THE AVERAGE AGE, THE AVERAGE SERVICE AND THE AVERAGE TIME THEY WERE UNDER MEDICAL OBSERVATION ON ACCOUNT OF THE DISEASES "V.D.H." OR "D.A.H." PRIOR TO INVALIDING.

TABLE III.—"V.D.H."

Where invalided	Average age at time of invaliding	Average service at time of invaliding	Average time under medical observation prior to invaliding	
				Under 2 months
India, 174 cases	24.7 years ..	5.3 years ..	4.8 months ..	19.6 per cent. (2)
Colonies, 54 "	24.1 " ..	5.5 " ..	3 " ..	40.7 " (2)
Home, 591 "	25.5 " (3)	6.08 " (4) ..	2.4 " ..	40.3 " (2)

TABLE IV.—"D.A.H."

Where invalided	Average age at time of invaliding	Average service at time of invaliding	Average time under medical observation prior to invaliding	
				Under 2 months
India, 78 cases	23.7 years ..	4.7 years ..	7.2 months (5)	14.1 per cent.
Colonies, 15 "	22 " ..	3.7 " ..	4.3 " ..	20 "
Home, 238 "	26 " (7)	5.2 " ..	4.9 " (6)	64.5 "

Notes to Tables III. and IV.—(1) A few exceptional cases of "V.D.H.," where the disease was diagnosed from one to several years prior to invaliding, I have omitted. They were evidently cases of difficult diagnosis, the symptoms showing or not according to the state of the man's general health.

(2) The shortness of the time given to medical observation as to the progress of cases before finally invaliding them is here well shown. It should be remembered, however, that to a certain extent the shortness of the time noted in the above table was partly due to the pressure of the South African campaign. But even allowing this to be a partial cause, the fact remains, that the time given, especially to Indian invalids, was far too short; 4.8 months was the average time, with as short a period as only two months, for 19.6 per cent. of the Indian invalids for "V.D.H." This time included

the time in hospital in India, the voyage home and the time at home prior to the man's discharge from the Service.

I lay especial stress on the Indian cases because these are the men that tend to improve very considerably after their arrival home and final discharge, and this even under the trying circumstances in which a discharged soldier is placed, having perhaps no regular meals, being ill housed, and having the anxiety of trying to obtain work and feeling, only too truly, that he is not yet fit for an ordinary day's labour. How can any reliable decision be come to in so short a time as is at present allowed, as to the likelihood or not of very considerable improvement in any given case?

As will be seen by a glance at Tables VII., VIII., IX. and X., very considerable changes for the better may be expected in quite a respectable percentage of the cases, and I submit that this hopeful view of every case of simple heart lesion and "D.A.H." should be taken. I am not of course speaking of the cases with the more serious heart lesions; these I shall refer to further on in the report.

The time also given for observation of colonial invalids (40·7 per cent. under two months) is far too short. Anæmia and general want of "tone" is so frequently present in these cases that this hurrying them out of the Service is surely a penny-wise policy.

(3) The average age at the time of invaliding at home is shown as 25·5 years. The South African war made the average age higher at home than in ordinary times, as many of the invalids were really direct from abroad and often Army Reserve men, these facts being easily lost sight of, as many of the men obtained furloughs and were afterwards invalided at home stations.

(4) There were double the number of invalids between one and two years' service, compared with those having five to twelve.

(5) No fewer than fourteen of the seventy-eight Indian invalids for "D.A.H." were under medical observation from one to three years (mostly in India) before being finally invalided. But with regard to the Indian invalids for "D.A.H." as for "V.D.H.," as a whole, too short a time is given after arrival in England before they are permanently invalided (14·1 per cent. under two months, being the "total" time for observation).

(6) One hundred and fifty-four of the 238 home invalids ("D.A.H.") were only under observation one to two months, again I think too short a time.

The greatest number of invalids for "D.A.H." as for "V.D.H." have between one and two years' service. The soldier at that time is not nearly full-grown, and before such a serious step as invaliding

is thought of, I would suggest a change of station, say from town to country or seaside. These young men would probably do well in a bracing climate, but they must avoid towns and their temptations and be under efficient medical control. Above all things, no hard gymnastic exercises, heavy drills or marches should be allowed, but light regular exercise in the open air can do nothing but good.

(7) Forty-four of the 238 cases were men of over 30 years of age, if these men were omitted the average age would fall to 23·6 years.

TABLE V., SHOWING IN 1,173 CASES OF "V.D.H." AND "D.A.H." (FROM THE "CONDITIONAL" PENSION LISTS, TAKEN *seriatim* 1895 TO 1901), THE NUMBER AND PERCENTAGE WHO SERVED IN OR WERE INVALIDED FROM INDIA.

"V.D.H.," 837 CASES		"D.A.H.," 336 CASES	
Served in, but not invalided from India	Invalided from India	Served in, but not invalided from India	Invalided from India
170 20·3 per cent.	174 20·8 per cent.	67 19·9 per cent.	78 23·2 per cent.

Note to Table V.—If anything the numbers under "Invalided from India" should be enlarged at the expense of Columns 1 and 3, as so many men, included perhaps in the latter, obtained furloughs and were eventually invalided as if on the home strength.

TABLE VI., DEALING WITH 837 CASES OF "V.D.H." TAKEN IN ORDER FROM THE "CONDITIONAL" PENSION LISTS FOR 1895 TO 1901 INCLUSIVE; SHOWING THE VALVES AFFECTED AND THE PRINCIPAL DISEASES SUFFERED FROM BY THE MAN WHILE SERVING (ANY SINGLE CASE MIGHT HAVE SUFFERED FROM MORE THAN ONE COMPLAINT.)

	No. of cases	Rheumatic fever	Ague	Enteric fever	Dysen- tery	Gonorrhœa (severe)	Syphilis
Aortic systolic ..	112	32	20	17	7	16	23
„ diastolic ..	41	14	12	4	5	13	15
„ double ..	40	15	4	11	2	3	7
Mitral systolic ..	466	229	72	62	31	77	78
„ diastolic ..	37	12	7	5	3	9	8
„ double ..	33	10	2	2	2	3	7
Pulmonary ..	5	3	—	1	—	—	—
Aortic and mitral	103	54	20	16	7	21	19
Totals ..	837	369	137	118	57	142	157

Notes to Table VI.—It is well shown in this table how very frequently the mitral valve is attacked in cases contracting rheumatic fever (50 per cent.).

The young soldier seems to be especially liable to the infection of rheumatic fever.

The other diseases, too, noted above, play a serious part in

TABLE VII., SHOWING THE STATE OF THE HEART AND GENERAL HEALTH COMBINED, IN AFTER YEARS, OF MEN GRANTED TEMPORARY ("CONDITIONAL") PENSIONS. THE FINAL STATE OF HEALTH ONLY OF EACH CASE IS ENTERED, THOUGH EVERY CASE WAS EXAMINED YEARLY. "D.A.H.," 1895 TO 1901 INCLUSIVE.

Year	Died during the first year	Died after the first year, up to the present date, Sept., 1907	DISTINCTLY WORSE						NO IMPROVEMENT						IMPROVED						APPARENTLY QUITE WELL						Grand totals	
			Total						Total						Total						Total							
			After 1 year	After 2 years	After 3 years	After 4 years	After 5 years	After 6 years	After 1 year	After 2 years	After 3 years	After 4 years	After 5 years	After 6 years	After 1 year	After 2 years	After 3 years	After 4 years	After 5 years	After 6 years	After 1 year	After 2 years	After 3 years	After 4 years	After 5 years	After 6 years		
1895	—	—	—	—	—	—	4	3	1	2	1	—	1	—	—	8	4	1	1	1	—	—	—	1	5	7	27	
1896	—	—	—	—	—	—	2	2	2	1	—	—	—	—	—	5	3	1	1	—	—	—	—	2	2	5	17	
1897	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	2	5	1	1	—	—	—	—	1	—	—	15	
1898	—	—	—	—	—	—	2	—	—	1	4	2	1	—	—	1	4	1	1	—	—	—	—	1	5	7	22	
1899	—	—	—	—	—	—	1	4	1	1	—	—	—	—	—	6	4	1	—	—	—	—	—	1	—	—	14	
1900	—	2	2	1	3	—	7	4	6	3	1	—	—	—	14	4	4	4	—	—	—	—	—	3	2	5	36	
1901	—	—	1	7	19	18	4	2	50	18	21	8	2	2	70	25	10	8	2	2	—	—	—	17	1	3	18	216
1900	1	—	—	8	26	21	9	4	68	31	32	30	12	5	3	113	49	19	4	2	—	—	—	29	4	3	78	347

TABLE VIII., SHOWING THE STATE OF THE HEART AND GENERAL HEALTH COMBINED, IN AFTER YEARS, OF MEN GRANTED TEMPORARY ("CONDITIONAL") PENSIONS. THE FINAL STATE OF HEALTH ONLY OF EACH CASE IS ENTERED, THOUGH EVERY CASE WAS EXAMINED YEARLY. "V.D.H.," 1895 TO 1901 INCLUSIVE.

Year	Died during the first year	Died after the first year, up to the present date, Sept., 1907	DISTINCTLY WORSE						NO IMPROVEMENT						IMPROVED						APPARENTLY QUITE WELL						Grand totals		
			Total	After					Total	After					Total	After					Total	After						Total	
				1 year	2 years	3 years	4 years	5 years		1 year	2 years	3 years	4 years	5 years		6 years	1 year	2 years	3 years	4 years		5 years	6 years	1 year	2 years	3 years			4 years
1895	5	3	8	1	4	1	2	—	—	8	3	5	4	2	—	—	14	3	7	—	—	—	—	10	3	2	—	5	45
1896	2	3	5	6	2	1	1	—	—	11	9	7	1	—	—	—	18	5	1	3	—	—	—	9	1	2	1	4	47
1897	2	1	3	3	1	3	—	—	—	5	3	4	2	1	—	—	18	2	2	2	—	—	—	4	3	4	—	24	64
1898	4	8	7	9	7	4	3	—	—	17	6	7	7	1	—	—	18	4	4	4	2	1	—	13	2	4	2	9	83
1899	8	3	11	9	5	4	—	—	—	18	16	7	2	—	—	—	25	8	5	7	—	—	—	20	7	2	—	9	83
1900	14	2	16	29	31	15	3	—	—	78	23	27	8	4	—	—	62	4	11	5	5	1	—	26	6	4	1	15	197
1901	40	13	53	92	48	13	2	1	156	94	67	12	4	1	—	—	179	26	15	11	6	—	—	58	13	9	2	27	473
75	28	103	293	141	100	38	12	2	293	154	118	86	12	3	1	324	52	45	28	12	2	1	140	35	23	10	4	1	933

causing a liability to heart lesions, probably by lessening the resisting power generally to disease. The medical history of many of the cases, especially of "D.A.H.," I have frequently noticed is as follows: gonorrhœa (often several times) or perhaps ague (repeated attacks), then "debility," followed very soon by "D.A.H." and invaliding.

We ought to be able to educate the young soldier to take better care of himself, not only against the contraction of the above diseases but in avoiding such so-called minor points as the danger of wearing damp clothing after any tiring exercise, &c. The lectures he is now attending, given by medical officers, should be of much service to him.

Notes to Table VII.—This table adds to the strength of my former remarks in reference to the large number of cases that would, I think, if a little more patience had been exercised, have remained and have been quite fit for the duties of a soldier.

Note especially how early a marked improvement in the state of the heart and general health combined takes place after invaliding; in as many as two-fifths of the total cases, by the end of the second year it may be said they have almost recovered. The advantage of keeping "D.A.H." cases, especially invalids from abroad, under proper medical supervision for a longer period than is at present customary is again very well shown.

I would suggest that all cases of "D.A.H.," as well as "V.D.H.," should be under the care, as far as possible, of special medical officers. No good, or very little, can be expected, if the patient and his medical adviser are strangers to one another; and besides, we want medical officers having special experience in these heart cases, so that the time of observation of each case, prior to a decision being come to as to the disposal of the man, may not be unduly prolonged.

Notes to Table VIII.—Tables VIII., IX. and X. are very closely connected.

Table VIII. points out especially the condition of the heart and bodily health combined as years go on after invaliding, but no special heart lesion is followed; it is, therefore, more of a "general" table than the two following. It shows yearly, after invaliding, the number of cases of "V.D.H." that, from a medical point of view, "Improve," "Recover Entirely," or make no attempt to do either.

Note first the deaths (coming so soon after invaliding), about one in nine for each year, making the large total of fifty-three for the year 1901. Note again, that those cases "Distinctly Worse" are

equal to as many as one-third of the remainder (deducting the deaths); and that the cases of "No Improvement" equal three-fifths of those left (after deducting the deaths and cases of "Distinctly Worse"). Practically about one man in five of the cases of "V.D.H." invalided, may be said to be fit for all light labour work in civil life, and at least 7 per cent. fit for heavy work two years after invaliding. Note again, that as in Table VII. any marked tendency to improvement in a case is seen within a very short time after invaliding, and this in spite of the many drawbacks to which soldiers on discharge must be exposed. I am not, then, expecting too much, I think, if I hope that by prolonging the medical observation and care of suitable heart cases to, say, six to nine months, it would lead to a great saving to the State.

TABLE IX., SHOWING THE VALVES AFFECTED IN 917 CASES ("CONDITIONAL" PENSION LISTS, 1895 TO 1901, INCLUSIVE), AND THE CONDITION OF THE HEART AT THE LAST MEDICAL EXAMINATION (ONE TO SIX YEARS) AFTER INVALIDING.

	Died	Distinctly worse	No improvement	Improved	Apparently quite well	Totals
Aortic systolic ..	16	34	41	20	16	127
„ diastolic ..	12	24	11	2	1	50
„ double ..	8	26	12	1	1	48
Mitral systolic ..	28	123	197	95	49	492
„ diastolic ..	—	13	16	5	2	36
„ double ..	2	16	14	3	—	35
Pulmonary ..	—	—	3	2	—	5
Aortic and mitral ..	21	58	29	12	4	124

TABLE X. (THE SAME 917 "V.D.H." CASES AS IN TABLE IX.), SHOWING, WITH REGARD TO THE SEPARATE VALVE LESIONS, THE CAPACITY OR OTHERWISE OF THE PATIENTS FOR THE DUTIES OF A SOLDIER AT HOME WHEN EXAMINED ONE YEAR AFTER INVALIDING. FOR THOSE FIT FOR ABROAD, TABLE IX., "APPARENTLY QUITE WELL" IS A FAIR ESTIMATE.

	Aortic systolic	Aortic diastolic	Aortic double	Mitral systolic	Mitral diastolic	Mitral double	Pulmonary	Aortic and mitral	Totals
Unfit ..	108	49	46	363	31	32	4	117	750
Fit ..	19	1	2	129	5	8	1	7	167
„ per cent.	15	5	4.2	26.2	14	8.6	20	5.6	18.2

Notes to Table IX. and X.—Note the order valvular lesions take as to their seriousness as causes of invaliding: (1) mitral systolic; (2) aortic systolic; (3) aortic and mitral; (4) aortic diastolic; (5) aortic double; (6) mitral, diastolic and presystolic; (7) mitral double.

Next note as to their order of seriousness to the patient: (1) Aortic diastolic; (2) aortic double; (3) mitral double; (4) aortic

and mitral ; (5) mitral, diastolic and presystolic ; (6) aortic systolic ; (7) mitral systolic.

These two lists are well worthy of study. Note the drop of both mitral and aortic systolic diseases, from the top of one list to the bottom of the other. This transposition, fortunately, means that the greater number of cases that at present lead to invaliding are those very cases of minor lesions that it will repay us best to seriously consider as to their retention for the good of the Service.

Perhaps it would be as well to get rid of the cases having other heart lesions from our thoughts, and so leave ourselves more free to discuss the minor, but, from a Service point of view more serious, lesions. Having, then, made quite certain that the case is one of either of the following: "aortic regurgitation," "double aortic," "double mitral," or "aortic and mitral" disease, let this case be invalided as soon as possible ; there can be no question as to what is the proper procedure. Again, any case of valvular lesion having in addition, "general" symptoms, due to want of compensation, must be invalided ; these cases can never again be relied on for serious duty.

There is, however, a doubt about the best procedure in cases having marked "mitral presystolic" or "diastolic" disease (I have classed them together in my tables). I think the best plan to follow would be, that having made as sure as possible of your diagnosis, to invalid them. There were thirty-six cases only in the seven years under consideration (I mean, of course, on the "conditional" pension lists), and of these only five could be said to be even doubtfully fit for duty after one year's observation. In recommending somewhat drastic invaliding in certain cases, I mean it to be understood that there is no reason to suspect any anæmic or debilitated condition as being a possible and removable cause of the heart affection.

I have now left for discussion aortic and mitral systolic diseases. Taking aortic systolic disease, I have, unfortunately, to at once make the following statement, *viz.*, that the cases of "apparently quite well" were almost certainly cases that, from want of longer observation, were wrongly diagnosed ; that is, that the valves, I think, were probably never affected, or if so, to a remarkably slight degree, as no trace of valvular lesion was discoverable in after years and the men were then perfectly well. This statement, and also judging from the above tables, at once puts aortic systolic disease as a reason for immediate invaliding, and the only lesion left to consider is mitral systolic disease.

TABLES XL., SHOWING THE NUMBER AND CHARACTER OF PENSIONS GRANTED TO MEN INVALIDED FOR "V.D.H.," "D.A.H." AND ANEURYSM, 1895 TO 1901 INCLUSIVE.

	Pensions	"V.D.H."		"D.A.H."		ANEURYSM		Totals	
		Royal Artillery	Other corps	Royal Artillery	Other corps	Royal Artillery	Other corps		
1895	<i>Nil</i>	39	195	11	79	1	—	325	471
	Final	9	37	—	12	—	1	59	
	Conditional..	7	41	3	29	—	—	80	
	Permanent ..	2	5	—	—	—	—	7	
	Total	57	278	14	120	1	1	471	
1896	<i>Nil</i>	46	244	14	224	—	—	528	657
	Final	7	24	2	6	—	3	42	
	Conditional..	3	45	4	16	—	1	69	
	Permanent ..	3	9	2	—	—	4	18	
	Total	59	322	22	246	—	8	657	
1897	<i>Nil</i>	23	181	14	120	1	1	340	452
	Final	7	32	2	13	1	1	56	
	Conditional..	5	20	2	16	—	1	44	
	Permanent ..	3	6	1	2	—	—	12	
	Total	38	239	19	151	2	3	452	
1898	<i>Nil</i>	24	219	19	171	—	2	435	614
	Final	7	39	3	13	—	3	65	
	Conditional..	8	60	1	27	—	—	96	
	Permanent ..	3	14	—	—	1	—	18	
	Total	42	332	23	211	1	5	614	
1899	<i>Nil</i>	26	142	16	111	—	—	295	514
	Final	18	53	1	24	—	—	96	
	Conditional..	10	78	—	19	—	—	107	
	Permanent ..	3	8	1	—	2	2	16	
	Total	57	281	18	154	2	2	514	
1900	<i>Nil</i>	62	293	26	137	—	—	518	926
	Final	6	75	11	45	—	1	138	
	Conditional..	18	183	6	34	—	—	241	
	Permanent ..	—	15	1	8	—	5	29	
	Total	86	566	44	224	—	6	926	
1901	<i>Nil</i>	78	298	36	138	—	—	550	1,555
	Final	23	165	6	75	—	3	272	
	Conditional..	51	438	25	191	—	5	710	
	Permanent ..	3	11	1	2	—	6	23	
	Total	155	912	68	406	—	14	1,555	
Grand Total ..									1,589

Before doing so and in connection with my remarks on aortic systolic disease, I should here mention that the four cases of "aortic and mitral" disease that recovered probably would come under the same heading of mistaken diagnosis. Cases with these serious heart lesions do not get "quite well."

When speaking of mitral systolic disease I think that the two tables IX. and X. can be discussed together. They both show that practically about 26 per cent. of all the cases that could be traced, tend to get sufficiently well to be able to do the duties of a soldier and with, certainly, no detriment to themselves, their duties being lighter all round, than the work labourers in civil life would have to do, and besides, the soldier is better fed, clothed, and housed.

TABLE XII., SHOWING THE NUMBER OF "CONDITIONAL" PENSIONS (ALREADY INCLUDED AS "CONDITIONAL" CASES IN TABLE XI.) CHANGED IN AFTER YEARS. ALL BRANCHES.

	To nil		To FINAL		To PERMANENT	
	"V.D.H."	"D.A.H."	"V.D.H."	"D.A.H."	"V.D.H."	"D.A.H."
1895	13	11	6	10	17	6
1896	8	7	10	7	23	3
1897	6	6	4	8	11	1
1898	9	8	17	6	31	10
1899	13	3	24	8	35	3
1900	8	2	21	12	152	20
1901	15	23	29	55	375	121
Totals	72	60	111	106	644	164

Seven to 10 per cent. of invalids for mitral systolic disease get absolutely well it would appear, and would be fit for any duties at home or abroad. There remains about 16 per cent. of cases that improve so much that at the end of a year (I am speaking, it must be remembered, of men exposed to the hardships and temptations of civil life, for they were civilians when examined) I considered they were fit for the duties of a soldier, at any rate at home. But a year is too long a time to wait, and I do not think it at all necessary to do so. If a man with a simple mitral systolic murmur is not fit for home duties after careful observation carried over a period of six months if at home, or nine months if an invalid from abroad, it is best to discharge him.

If we gain by a better and more prolonged observation of heart cases to such an extent as for "aortic systolic" 15 per cent., "aortic and mitral" 5·6 per cent., and "mitral systolic," say,

another 20 to 25 per cent. on our present invaliding, the extra money spent on their food, clothing, and housing can only be a good investment, and in addition it must be remembered the country gains the money for the "conditional" pensions saved that each of the men would otherwise certainly be drawing for the first year after invaliding.

Note to Tables XI. and XII.—These tables have been compiled as I proceeded with my enquiry from year to year, and are embodied in my report, not so much as having anything to do with it, as for the fact that they are interesting in themselves. Medically, they are of no value, as pensions are not given on purely medical grounds, but the tables give a true summary of the large amount of invaliding due to heart lesions and aneurysm for which our small Army is more or less responsible.

SUMMARY.

(1) Greater care in the medical examination of recruits as to the condition of the heart, and all in the least suspicious cases to be followed up and examined several times. Recruiting offices are often not the best places for definite decisions to be arrived at.

(2) Delicate, over-grown lads are not fitted for service in hot enervating climates.

(3) All invalids from abroad for "V.D.H." or "D.A.H." should come before a medical board prior to discharge to duty.

(4) Over one-third of the cases invalided for "D.A.H." were found to be fit for duty one year, and two-fifths were almost recovered two years, after invaliding.

(5) Cases of "V.D.H." (mitral systolic, with no general symptoms) and "D.A.H." that improve so much after invaliding, tend to do so in the early months, and therefore no case of either of these diseases should be discharged the Service, except they have been, if at home, six months, and if from abroad, nine months, under careful medical observation. A more hopeful view of the eventual recovery, or great improvement, in these cases must be taken. At present much too short a time is allowed for any correct decision to be come to as to whether they will be fit or not for further duty.

(6) Change of air and scene, such as a bracing, open-air life, and varied duties are not given a proper trial; this applies especially to early cases of "D.A.H." in growing lads.

(7) Special medical officers would be, by their experience gained in observing many cases, very valuable.

(8) Greater care is necessary before deciding about cases having basic murmurs. Anæmia and general debility as causes of these murmurs and of "D.A.H." (especially in cases from abroad) are not given sufficient attention.

The want of influence, in any way, of age and former occupation on the occurrence of "V.D.H." though not mentioned before in this report, I should like to mention here. The most serious cases, and again the most trivial, being as often seen in a clerk as in a blacksmith.

As to the advisability of giving furloughs to men invalided from abroad for "V.D.H.," or "D.A.H.," I, personally, am much against it. The patient at this time needs especially to be under the medical supervision of some one who is an experienced observer of these cases. Some cases, probably the majority, must be kept in hospital, others might be best treated as convalescents in camps, especially during the summer. A definite decision will have to be come to on each case as to what is best to be done with the man for the good of the Service, and we should be able to decide fairly correctly about any case in six to nine months total observation, but, judging by the mistakes made, not in a less time. No good can be expected by giving men furloughs and sending them to their homes, often very insanitary, over-crowded houses, where the food may be unsuitable, and the temptation to all kinds of excesses great. These cases so often return, not to Netley, Portsmouth, or Woolwich, where their former condition might be remembered, but to some other hospital, and are there probably, indeed, frequently, hurriedly invalided, practically nothing being known of the case.

I have already recommended special medical officers for these cases; the patient, I think, should be under their care from the time they report sick at home, or land, if from abroad.

I think this a fitting opportunity to mention the good that might be expected if the drills and gymnastic training of the young soldier were more under direct medical guidance. I am sure the instructors are capital men and are doing their best, and also that they turn out a large number of young fellows who have greatly benefited by the training so carefully and conscientiously given. But I think there are many lads quite unfitted—at any rate until they have a year's service—to undergo the trials of an ordinary gymnastic course. The usual medical official visits are really of little practical use, and I should like to go so far as to recommend that gymnasia generally should be under the direction of medical officers.

A gymnasium under a medical officer, say at Aldershot, where other medical officers could attend prior to taking up similar posts in other garrisons, but still being under the control of the central training medical authority at Aldershot, would, I think, be a good way of beginning such a change.

With regard to heart disease and the question as to whether cases having simple heart lesions can serve on with advantage to the Service, I think that I have proved that, limiting the cases to mitral systolic disease with good compensation, the answer to the question is certainly "yes," that is for employment at home; I do not recommend their being sent abroad, though it should be noted that under a more prolonged observation at least 10 per cent. of the invalids for simple mitral disease would be passed as "recovered," and therefore be fit for abroad.

It will have been seen that not more than 16 per cent. of all mitral systolic cases have to be considered, these being the cases that have improved sufficiently to do light laborious work, and that as a heavy year such as 1901 having 254 invalids for mitral systolic disease (I have taken the number from tables I have not shown in this report, which I am afraid is already unduly long) would therefore only give 40 such cases, and an average year about 9 or 10, I think there is no reason that in consequence of keeping these cases for service at home we should be running the risk of surrounding ourselves with men having delicate hearts.

The weak points of our present procedure in regard to all heart cases appear to be want of care at the beginning of the man's service—I mean want of care in admitting recruits and their after-training—and then a most unnecessary hurrying of all heart cases out of the Service, no care being taken to find out the stationary condition of the heart after the man has been given every opportunity of recovering his general health.

SPINAL ANALGESIA, WITH NOTES OF FIFTY CASES.

BY MAJOR C. G. SPENCER AND CAPTAIN J. W. H. HOUGHTON.

Royal Army Medical Corps.

As spinal analgesia is still, in this country, on its trial, a brief record of our experiences as beginners in the use of this method of inducing analgesia may be of interest. A number of details in procedure must be carefully attended to if good results are to be obtained and unpleasant after-symptoms avoided, but with a little practice the technique becomes quite easy, and with the intelligent co-operation of all concerned—sisters, orderlies, and patients—as a rule all goes smoothly.

It is not our intention to discuss the principles of the method or its technique at any length. That has been done very fully and clearly by Mr. A. E. Barker in his paper in the *British Medical Journal* of March 23rd, 1907, which should be carefully studied by any one who intends to use spinal analgesia. We have followed Mr. Barker's methods closely, and have had the advantage of watching his work and of much advice and assistance from him. Briefly, the procedure is as follows:—

The syringe, needle, stylet and cannula are sterilised by boiling in *distilled* water, and allowed to cool to about blood heat. The needle, stylet and cannula are carefully wiped with sterile gauze and placed ready for use, and the cannula is attached to the syringe. The ampoule of stovain solution is wiped over with spirit and the point of the tube broken, and the required dose is drawn into the syringe, all air being carefully expelled.

The patient's skin is prepared as for an aseptic operation, and finally washed with spirit and dried with sterile gauze. This final washing is best done when the patient has been placed in position. The patient may either sit on the operation table with his feet on a chair and his elbows on his knees, so that the spine is well flexed, or he may lie on either side with his knees drawn up and spine flexed, the head being raised. We have found the sitting position convenient when high analgesia is not desired, but most of our cases have been injected lying on the side. It seems to make little or no difference which side the patient lies on, the analgesia usually reaching to the same level on both sides of the body. A sterilised towel is placed across the lower part of the back, and through this the iliac crests are felt. The line between the highest points of the

crests gives the level of the fourth lumbar spine, and the puncture is made either immediately above this spine, in the third lumbar interspace, or one space higher, just above the third lumbar spine. The spine is marked by placing the first and second fingers of the left hand on either side of it so as to steady the skin, and the puncture is made with the point of the needle close above the spine, exactly in the middle line, in a direction forwards and slightly upwards. It is well to warn the patient that he will feel a prick and caution him to keep quite still. Care and accuracy in "taking aim" with the needle are important to enable the dural sac to be reached without any hitch. When the needle has been entered about an inch the stylet is withdrawn, and the needle slowly and steadily pressed on till cerebro-spinal fluid begins to flow. This flow occurs in rapid drops, and unless the flow is satisfactory no attempt should be made to inject the stovain solution. About 5 to 10 cc. are withdrawn into a sterile measure glass or test tube, and the cannula with the syringe attached is then passed as far as it will go into the needle, and the dose injected. The syringe, cannula, and needle are then withdrawn together, a small piece of rubber plaster put on the puncture, and the patient at once turned on his back with the head raised, and the pelvis elevated about four inches. This manœuvre must be carried out smoothly and steadily, without haste and without loss of time, care being taken not to shake the patient and not to allow the head to be lowered. A little preliminary training of the orderlies is desirable.

Analgesia commences in from one to five or six minutes, some "pins and needles" in the toes being one of the first signs. As soon as analgesia is fairly established the pelvis is lowered, and the operation may be begun as soon as the final cleansing of the skin is complete. In addition to the analgesia there is the most perfect muscular relaxation, most noticeable in operations on the rectum and in abdominal operations. After the operation is finished, the patient is removed to the ward and put to bed, great care being taken that he is not jolted or shaken, and that the head is kept well up all the time. It is necessary to impress this point on the sisters and orderlies, and on the patient himself. The patient is usually propped up in the sitting position, or nearly so, in bed.

It is hardly necessary to say that all manipulations connected with the puncture and injection must be carried out with the strictest aseptic care.

The chief difficulties we experienced at first were in connection with making the puncture. In two cases (Cases 4 and 8 in the

TABLE.

No. of case	Name and age	Operation for	Position of patient	Site of puncture and amount of cerebro-spinal fluid withdrawn	Dose	Pelvis raised	Analgesia complete in	Height of analgesia	Condition of patient during operation	After-effects
1	Pensr. G. 35	Piles (White-head)	Lying, R. side	2nd lumbar sp. (twice); 10 cc. drawn	5 cgr.	4 ins. for 2 mins.	3 mins. Operation begun, 6 mins.; finished, 25 mins.	7th costal cartilage	Excellent ..	Sensation returned in 40 mins. Slight headache, 6 hrs.; no vomiting.
2	Sergt. W. 27	Piles, lig. and excision	" "	2nd space; 10 cc. drawn	6 cgr.	" "	3½ mins. Operation begun, 6 mins.; finished, 20 mins.	" "	" ..	Sensation returned in 60 mins. Slight headache, 10 hrs.; no vomiting.
3	Pte. D... 23	Hernia, R. inguinal	" "	" "	6½ cgr.	4 ins. for 5 mins.	6 mins. Operation begun, 14 mins.; finished, 55 mins.	" "	Slight faintness for a few minutes	Sensation returned in 105 mins. No headache or vomiting.
4	" N... 21	Piles ..	Lying, R. side, and sitting	2nd space. spinal canal. No fluid drawn. No injection.	Failed	to enter				
5	" D... 26	Hernia, L. inguinal	Lying, L. side	2nd space; 10 cc.	6½ cgr.	6 ins. for 5 mins.	6 mins. Operation begun, 10 mins.; finished, 34 mins.	Umbilicus	Excellent ..	Sensation returned in 40 mins. Rather severe headache for 24 hrs.; no vomiting.
6	" G... 21	Hernia, R. inguinal	Lying, R. side	" "	5 cgr.	4 ins. for 4½ mins.	5 mins. Operation begun, 8 mins.; finished, 40 mins.	7th costal cartilage	Slight nausea for 15 mins.	Sensation returned in 50 mins. Severe headache for 24 hrs.; no vomiting.
7	Pensr. B. 26	Necrosis, R. tibia and fibula	" "	" "	" "	4 ins. for 3 mins.	4 mins. Operation begun, 6 mins.; finished, 35 mins.	Nipple line	Excellent ..	Sensation returned in 55 mins. No headache; vomited once 4 hrs. after.
8	" H. 28	Urethral fistula	Lying, R. side, and sitting	2nd and 3rd space. enter spinal canal. form given.	Failed to enter spinal canal. Chloro-					
9	Gr. McN. 20	Tubercle, R. knee (excision)	Lying, R. side	2nd space; 10 cc.	6 cgr.	4 ins. for 4 mins.	5 mins. Operation begun, 12 mins.; finished, 60 mins.	" "	Excellent for 45 mins. then felt stitches	Sensation began to return in 45 mins. Morph. hyp. ½ gr. given; no after-effects.
10	Pte. B... 29	Hernia, L. inguinal	Lying, L. side	" "	" "	4 ins. for 5 mins.	5 mins. Operation begun, 10 mins.; finished, 45 mins.	" "	Excellent ..	Sensation returned in 65 mins. Severe headache for 12 hrs.; no vomiting.
11	" D... 28	Appendectomy	Lying, R. side	" "	5 cgr.	4 ins. for 3 mins.	4 mins. Operation begun, 4 mins.; finished, 50 mins.	" "	" ..	Sensation returned in 60 mins. No headache or vomiting.
12	" P... 33	Necrosis, L. femur	Lying, L. side	" "	" "	4 ins. for 1 min.	1½ mins. Operation begun, 6 mins.; finished, 30 mins.	7th costal cartilage	" ..	Sensation returned in 85 mins. Slight headache, no vomiting.

13	Pte. M. 20	Hernia, R. inguinal	Lying, side	R.	2nd space ; 10 cc.	5 cgr.	4 ins. for 2 mins.	3 mins. Operation begun, 8 mins.; finished, 40 mins.	Nipple line	Vomited on the table for 10 mins.	Sensation returned in 45 mins. No headache or vomiting.
14	" W. 27	Hernia, L. inguinal	Lying, side	L.	" "	" "	" "	3 mins. Operation begun, 6 mins.; finished, 35 mins.	7th costal cartilage	Felt faint and sick. Severe headache, 5 mins. Did not vomit	Sensation returned in 50 mins. No headache or vomiting.
15	Penr. M. 42	Intestinal obstruction	Lying, side	R.	" "	6 cgr.	4 ins. for 3 mins.	3 mins. Operation begun, 6 mins.; finished, 90 mins.	2nd inter- costal space	Good. Had fecal vomit- ing.	Sensation returned in 105 mins. No headache. Vomited twice in first 2 hrs. Died 30 hrs. after operation.
16	Sergt. C. 30	Hernia, L. inguinal	Lying, side	L.	" "	5 cgr.	" "	3 mins. Operation begun, 9 mins.; finished, 40 mins.	6th costal cartilage	Vomited once, otherwise ex- cellent	Sensation returned in 50 mins. No headache, no vomiting.
17	Pte. B... 19	Piles	Sitting	"	3rd space ; 10 cc.	2½ cgr.	Pelvis not raised	1 min. Operation begun, 5 mins.; finished, 20 mins.	Limited to perineum	Excellent	Sensation returned in 80 mins. No headache or vomiting.
18	" C... 21	Removal L. testis	"	"	2nd space ; 10 cc.	5 cgr.	4 ins. for 2 mins.	2 mins. Operation begun, 5 mins.; finished, 30 mins.	Umbilicus	"	Sensation returned in 90 mins. Very slight head- ache, no vomiting.
19	Lee, Cpl. O. 25	Hernia, L. inguinal	Lying, side	L.	" "	" "	4 ins. for 3 mins.	3 mins. Operation begun, 4 mins.; finished, 50 mins.	5th rib	"	Sensation returned in 145 mins. Slight headache, no vomiting.
20	Pte. D... 24	Hernia, R. femoral	Lying, side	R.	" "	" "	4 ins. for 2 mins.	2 mins. Operation begun, 6 mins.; finished, 45 mins.	7th costal cartilage	Good. Slight faintness	Sensation returned in 85 mins. Slight headache in evening, vomited once.
21	Penr. R. 34	Necrosis, R. ilium	Sitting	"	3rd space ; 5 cc.	" "	4 ins. for 1 min.	1 min. Operation begun, 5 mins.; finished, 30 mins.	" "	Excellent	Sensation returned in 90 mins. No headache or vomiting.
22	Pte. P... 33	Necrosis, L. femur	Lying, side	L.	2nd space ; 5 cc.	" "	" "	1 min. Operation begun, 10 mins.; finished, 45 mins.	Costal mar- gin	"	Sensation returned in 85 mins. No headache or vomiting.
23	" McV. 19	Varicocele	" "	"	2nd space ..	3 cgr.	4 ins. for 2 mins.	2 mins. Operation begun, 5 mins.; finished, 20 mins.	7th costal cartilage	"	Sensation returned in 50 mins. No headache or vomiting.
24	" B...	Hernia, R. inguinal	Lying, side	R.	3rd space ; 5 cc.	4 cgr.	" "	2 mins. Operation begun, 6 mins.; finished, 45 mins.	8th costal cartilage	"	Sensation returned in 75 mins. Vomited once in evening.
25	" C...	Varicocele	Lying, side	L.	2nd space ; 10 cc.	5 cgr.	4 ins. for 1 min.	1 min. Operation begun, 8 mins.; finished, 40 mins.	2nd rib	Slight nausea for 5 mins.	Sensation returned in 120 mins. No headache or vomiting.

TABLE.—Continued.

No. of case	Name and age	Operation for	Position of patient	Site of puncture and amount of cerebro-spinal fluid withdrawn	Dose	Pelvis raised	Analgesia complete in	Height of analgesia	Condition of patient during operation	After-effects
26	Pte. D... 23	Necrosis, R. foot	Lying, R. side	3rd space; 5 cc.	5 cgr.	4 ins. for 2 mins.	2 mins. Operation begun, 6 mins.; finished, 15 mins.	7th costal cartilage	Excellent ..	Sensation returned in 75 mins. Slight headache in evening, no vomiting.
27	" M. 25	Excision, ingl glands, R. side	" "	2nd space; 5 cc.	" "	4 ins. for 1 min.	1 min. Operation begun, 8 mins.	" "	" "	Sensation returned in 75 mins. Slight headache, no vomiting.
28	" L... 28	Hernia, L. inguinal	Lying, L. side	" "	4½ cgr.	1 in. for 2 mins.	3 mins. Operation begun, 11 mins.; finished, 56 mins.	1 in. below xiphisternum	" "	Sensation returned in 75 mins. No headache or vomiting.
29	" T... 29	Loose body, R. knee	Lying, R. side	3rd space; 10 cc.	5 cgr.	4 ins. for 1 min.	1 min. Operation begun, 13 mins.	7th costal cartilage	" "	Sensation returned in 60 mins. No headache or vomiting.
30	Dr. C. 18	Appendix abscess	" "	2nd space; 6 cc.	5½ cgr.	4 ins. for 2 mins.	2 mins. Operation begun, 5 mins.; finished, 60 mins.	5th costal cartilage	" "	Sensation returned in 80 mins. No headache or vomiting.
31	Pte. J. 18	Hernia, R. inguinal	" "	2nd space; 5 cc.	5 cgr.	4 ins. for 1 min.	1 min. Operation begun, 6 mins.; finished, 40 mins.	7th costal cartilage	" "	Sensation returned in 60 mins. Slight headache, no vomiting.
32	Dr. C. 18	" "	" "	" "	" "	" "	1 min. Operation begun, 5 mins.; finished, 35 mins.	" "	Felt faint for 10 mins.	Sensation returned in 55 mins. No headache or vomiting.
33	Corpl. H. 30	Piles	Sitting ..	2nd space; 15 cc.	4 cgr.	Pelvis not raised	1 min. Operation begun, 5 mins.; finished, 15 mins.	Limited to perineum	Felt faint ..	Sensation returned in 60 mins. Slight headache in evening; slight vomiting.
34	Pte. B... 23	Varicocele	Lying, L. side	2nd space; 10 cc.	" "	4 ins. for 2 mins.	2 mins. Operation begun, 5 mins.; finished, 20 mins.	7th costal cartilage	Good, but felt faint and vomited	Sensation returned in 70 mins. No headache or vomiting.
35	Penst. B. 26	Necrosis of tibia	Lying, R. side	" "	5 cgr.	4 ins. for 1½ mins.	2 mins. Operation begun, 8 mins.; finished, 60 mins.	" "	Excellent, felt last stitches	Sensation returned in 60 mins. No headache or vomiting.
36	Pte. W... 19	Varicocele	Lying, L. side	2nd space; 5 cc.	4 cgr.	4 ins. for 1 min.	1 min. Operation begun, 6 mins.; finished, 25 mins.	" "	Excellent ..	Sensation returned in 76 mins. No headache or vomiting.
37	" N... 22	Appendix abscess	Lying, R. side	" "	5 cgr.	4 ins. for 2 mins.	2 mins. Operation begun, 8 mins.; finished, 20 mins.	Nipple line	" "	Sensation returned in 78 mins. Was vomiting before operation, and slightly afterwards.

38	Pte. C. . . 22	Chronic sy- novitis, L. knee	Lying, L. side	3rd space ; 5 cc.	5 cgr.	4 ins. for 3 mins.	3 mins. Operation begun, 7 mins. ; finished, 38 mins.	Costal mar- gin	Good; felt hot irrigation at end of opera- tion	Sensation returned in 47 mins. Severe headache next morning. No vom- iting.
39	" T. . . 25	Hernia, R. inguinal	Lying, R. side	2nd space ; 5 cc.	" "	4 ins. for 1 min.	1 min. Operation begun, 5 mins. ; finished, 30 mins.	Nipple line	Good	Sensation returned in 105 mins. Vomited just after operation. No other trouble.
40	" G. . . 22	" "	" "	3rd space ; 5 cc.	" "	4 ins. for 2 mins.	2 mins. Operation begun, 5 mins. ; finished, 30 mins.	Costal mar- gin	Excellent	Sensation returned in 45 min. No headache, slight nausea after operation.
41	Sergt. C. 33	Hernia, L. inguinal	Lying, L. side	3rd space ; 4 cc.	" "	" "	2 mins. Operation begun, 5 mins. ; finished, 41 mins.	Nipple line	"	Sensation returned in 85 mins. No headache or vomiting.
42	Pte. W. . . 23	Hernia, R. inguinal	Lying, R. side	3rd space ; 2 cc.	" "	4 ins. for 4 mins.	4 mins. Operation begun, 4 mins. ; finished, 32 mins.	" "	"	Sensation returned in 120 mins. No headache or vomiting.
43	" E. . . 20	Liver ab- scess	" "	3rd space ; 3 cc.	" "	4 ins. for 5 mins.	5 mins. Operation begun, 5 mins. ; finished, 31 mins.	6th costal cartilage	Good	Sensation returned in 40 mins. No headache or vomiting.
44	" B. . . 25	Wiring L. patella	Lying, L. side	2nd space ; 5 cc.	" "	4 ins. for 2 mins.	2 mins. Operation begun, 10 mins. ; finished, 45 mins.	7th costal cartilage	Excellent	Sensation returned in 50 mins. No headache. Vomited once.
45	Corpl. F. 21	Hernia, R. inguinal	Lying, R. side	" "	" "	" "	2 mins. Operation begun, 8 mins. ; finished, 35 mins.	Nipple line	Good, but vomited twice	Sensation returned in 55 mins. No headache or vomiting.
46	Sergt. M. 35	Piles	Sitting	" "	" "	Pelvis not raised	2 mins. Operation begun, 8 mins. ; finished, 45 mins.	Symphysis pubis	Good, though a nervous patient	Sensation returned in 65 mins. No headache or vomiting.
47	Pte. I. . . 27	Examina- tion of ab- domen	Lying, R. side	2nd space ; 6 cc.	6 cgr.	8 ins. for 2 mins.	2 mins. No opera- tion	2 ins. above clavicle, and partial an algesia of both arms	Sensation returned in 180 mins. No headache or vomiting. Felt faint shortly afterwards.	Sensation returned in 65 mins. No headache. Vomited once 6 hours after operation.
48	" C. . . 20	Hernia, L. inguinal	Lying, L. side	2nd space ; 5 cc.	5 cgr.	4 ins. for 2 mins.	2 mins. Operation begun, 6 mins. ; finished, 40 mins.	Nipple line	Felt faint on table	Sensation returned in 75 mins. No headache or vomiting.
49	" R. . . 22	" "	" "	" "	" "	" "	2 mins. Operation begun, 5 mins. ; finished, 30 mins.	" "	Good. Vom- ited a little	Sensation returned in 90 mins. No headache ; slight nausea, no vomit- ing.
50	" P. . . 34	Necrosis, L. femur	" "	" "	" "	1 in. for 2 mins.	2 mins. Operation begun, 8 mins. ; finished, 65 mins.	6th costal cartilage	Excellent	

accompanying table) we failed altogether to enter the spinal canal. This was partly due to want of experience and partly owing to both these patients being highly nervous and flinching from the prick of the needle. One man (Case 8) had slight lateral curvature of the spine. Difficulty in reaching the dural sac was experienced in six other cases (Cases 1, 10, 19, 21, 24 and 38). Only one of these was among the last twenty-six cases injected.

In four cases (Nos. 1, 10, 19 and 23) the first injection failed to produce any analgesia. This was probably due to the point of the needle having slipped out of the dural sac after puncturing it, so that, though cerebro-spinal fluid continued to find its way out by the needle, the fluid injected only reached the cellular tissue outside the dura. In each case, when no effects appeared after fifteen minutes, a second puncture and injection were made, with complete success.

The solution used was one containing 5 per cent. of stovain in a 5 per cent. solution of glucose, as recommended by Mr. Barker. This solution is heavier than the cerebro-spinal fluid and sinks to the most dependent part of the spinal canal, usually the upper or mid-dorsal region when the pelvis is raised. The dose was usually 5 centigrammes of stovain (1 cc. of the solution). The largest dose given was $6\frac{1}{2}$ centigrammes of stovain (Cases 3 and 5), and the smallest $2\frac{1}{2}$ centigrammes (Case 17).

The duration of the analgesia was very variable. The shortest duration was thirty minutes, in Case 17, and the longest three hours, in Case 47. The return of sensation in the toes was taken as marking the end of analgesia. Analgesia lasted less than three-quarters of an hour in only four cases; in twelve it lasted forty-five to sixty minutes, and in thirty-two cases it lasted an hour or more. In only one case was there any marked return of sensation before the operation was finished (Case 9), and in no case was it necessary to give chloroform to supplement the stovain. The duration of the analgesia seems to depend more on the promptness with which the patient is turned on the back and elevated, so that none of the dose is lost by diffusion or by gravitation towards the sacrum, than on the amount injected.

The level to which the analgesia reached depended to a great extent on the degree of elevation of the pelvis, and to a less extent on the size of the dose and the quickness with which elevation was performed. In rectal cases the pelvis was sometimes not raised at all, the injection being given in the sitting position, and in these cases analgesia was confined to the region supplied by the sacral

nerve-roots. Usually, in ordinary cases, analgesia reached to the lower end of the sternum or the nipple line, and in one case (No. 47) it extended well above the clavicle and over the greater part of both upper limbs.

The condition of the patient during operation was as a rule quite satisfactory. Analgesia was always adequate, and even in severe operations on weakly patients shock was conspicuous by its absence. In seven cases there was slight faintness, and in three some nausea, these conditions being probably due to the heat of the theatre and to nervousness. Six patients vomited during the operation; two of these were abdominal cases that had been vomiting beforehand. In one case there was severe headache for five minutes, which disappeared as rapidly as it had come on, in a very nervous patient. With regard to the condition of the patient on the table, much depends on what has been aptly called "moral anæsthesia." Care must be taken to divert his attention from the operation, his face must, of course, be screened off, he should be given a book or paper to read, and allowed to smoke if he likes. No one should be allowed to suggest to him, by injudicious questioning, that he is likely to feel anything. The surgeon who has confidence in his methods can easily communicate that confidence to his patients. It must never be forgotten that the patient is fully conscious, and any remarks as to the operation or the prognosis must be very guarded. Most of our patients were quite at their ease and smoked or chatted cheerily all the time.

The after-effects may be unpleasant if certain precautions are not observed. Severe headache occurred in four of our cases, and was due to the patient's head not having been kept raised, so that some of the injection reached the cranial cavity. In ten other cases there was slight headache. Headache can be avoided by care in keeping the head raised and care in moving the patient. Vomiting after the operation occurred in eight cases, but was never troublesome. In two of these cases there had been vomiting before the operation. The absence of shock was very noticeable. One case died (Case 15)—a case of intestinal obstruction in which death was due to intestinal paralysis. It is particularly in cases in very bad condition, in which it would be dangerous to give a general anæsthetic, that the advantages of spinal analgesia are most marked.

One case (No. 47) complained of feeling very faint a short time after being put back to bed. This patient also complained of pains

in all his joints on the following day, but it is doubtful how far these can be attributed to the stovain.

In conclusion, we would emphasise the necessity of careful study of and strict attention to details in order to get satisfactory results, and we would strongly recommend any one who wishes to take up spinal analgesia to see it done, and so become practically familiar with the steps of the technique before attempting it himself.

Our thanks are due to Major M. P. Holt, D.S.O., R.A.M.C., for permission to include in this series Cases 24, 25, 28 and 29, which were injected by one of us at the Royal Herbert Hospital, Woolwich. The remainder of the cases were done at the Queen Alexandra Military Hospital during the last four months.

THE DISPOSAL OF THE WOUNDED OF MOUNTED TROOPS.

BY LIEUTENANT-COLONEL H. HATHAWAY.
Royal Army Medical Corps.

THE following improvements have recently been made in the "Hathaway" saddle crutch:—

(1) One adjustment has been designed to fit all saddles instead of having one pattern for British Cavalry and Royal Artillery and another for the Hussar pattern saddle of the Indian Cavalry.

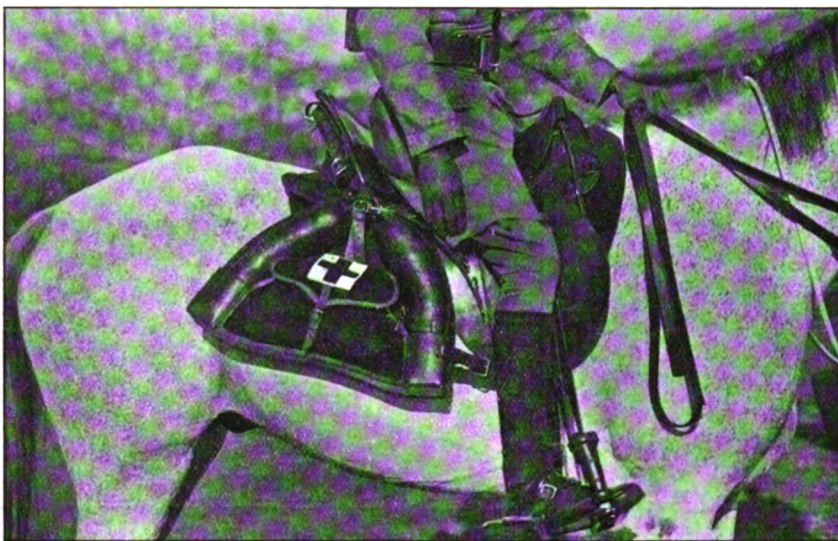


FIG. 1.

(2) By pressing on a button behind the crutch the posterior support can be either fixed at right angles to the crutch for use, or made to lie alongside the crutch. When in this position the crutch can be carried in the ranks of the squadron.

(3) The crutch is carried on D on off side of saddle (fig. 1). The strap that fixes the crutch to saddle, and which it is only necessary to unbuckle to free the crutch for instant use, also supports a small bag into the leather sockets of which the ends of the crutch fit.

When the crutch is removed for use the bag remains on the saddle; it contains extra bandages and small cane splints, &c. (fig. 2).

In "savage warfare" the crutch might at any time be of great use to prevent torture and mutilation. It is not designed to take

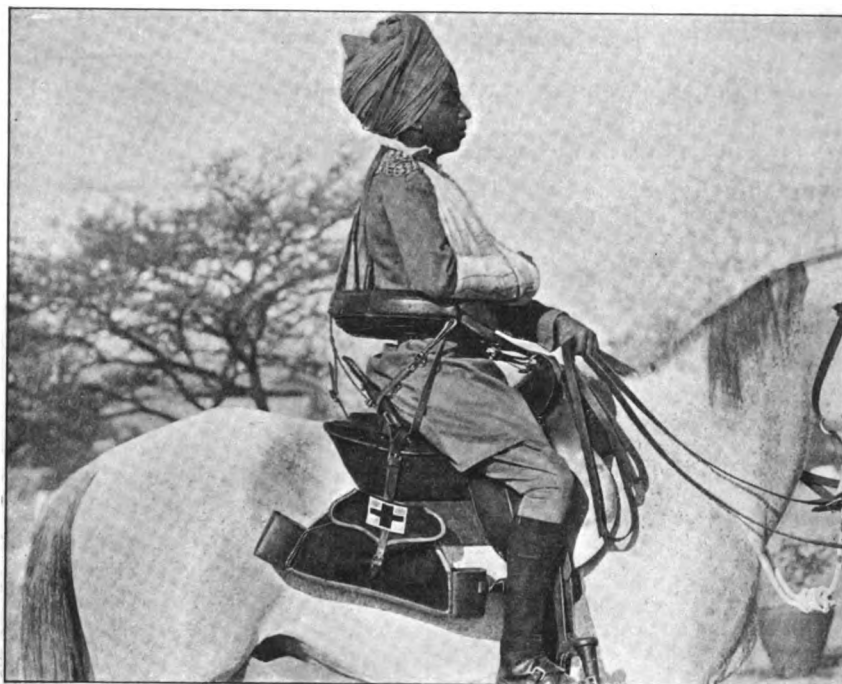


FIG. 2.

the place of any of the present means of transporting wounded. In peace time it could very rarely be used, but in civilised campaigns, fighting under the Geneva Convention, there would often be occasions in which the saddle crutch would prevent wounded being lost for some time, or becoming prisoners.

NOTES ON SIMPLE CONTINUED FEVER IN MALTA.

BY LIEUTENANT-COLONEL J. J. GERRARD.

Royal Army Medical Corps.

THE term "Simple Continued Fever" has been applied for statistical purposes to the cases of fever of unrecognised type which are met with abroad. The advances which have been made in recent years in diagnostic methods have resulted in many of these fevers being classified and named, so that nowadays Malta fever, sleeping sickness, para-typhoid fever, &c., are recognised as definite specific diseases. On the other hand, improved methods of staining have increased the accuracy of diagnosis in malaria, and fevers which were formerly believed to belong to this class are now known not to be due to that parasite, and have to be returned as simple continued fever. The name is an unfortunate one, and it is satisfactory to know that it is being altered in the new "Nomenclature of Diseases."

There are an enormous number of cases of sickness in the Army returned under this heading every year. This Island of Malta has always been noteworthy in this respect. Up to 1897, when the heading "Mediterranean Fever" was introduced into the statistical returns, cases of the disease were perforce returned as "Simple Continued Fever," although the condition was well recognised. One would expect that, since 1897, the numbers of cases of simple continued fever would have been reduced in proportion to the increase of Malta fever, but, curiously enough, this has not been so, and the cases of simple continued fever have since continued to be admitted to hospital in great numbers.

In the ten years prior to the introduction of Mediterranean fever into the returns, viz., 1887-1896, the admission ratio per 1,000 of strength was 125·6 for simple continued fever. Since then, in the nine years 1897-1905, the admission-rate per 1,000 of strength rose to 142·4, although the ratio for Mediterranean fever was 36·2. During this period the death-rate was 0·01, the year 1898 being the only one in which any deaths were recorded. This admission ratio of 142·4 per 1,000 of strength is enormously high, and compares very unfavourably with other foreign stations, in all of which the fever occurs, but in which the ratio for the same period has varied from 64·6 in Egypt to 30·5 in India, 15·7 in Bermuda, and 0·7 in Mauritius.

The question of what these fevers are is consequently one of very great interest. The Mediterranean Fever Commission in their Reports for 1906 (Part VII.), express the opinion that "their undue prevalence has a direct relation to Mediterranean fever," and again, "there can be little doubt, therefore, that many cases which have been returned as simple continued fever are in reality mild cases of Mediterranean fever. This must necessarily continue to be the case as long as there is no certain means of distinguishing between atypical cases and ordinary febrile attacks." They also draw attention to "the simultaneous disappearance of Mediterranean and simple continued fevers which has occurred in Gibraltar in the course of the last twenty years," and that "a similar reduction of simple continued fever prevalence has occurred during the second half of 1906 in Malta in connection with a reduction of Mediterranean fever prevalence."

These undoubtedly are very striking facts, although the paragraph "the simultaneous disappearance of Mediterranean and simple continued fevers in Gibraltar, &c.," is perhaps rather too strongly put, as the ratios per 1,000 are: 1897, Mediterranean fever, 4·0, simple continued fever, 10·1; 1904, Mediterranean fever, 0, simple continued fever, 4·8; and in 1905, Mediterranean fever, 0·7, and simple continued fever, 9·1. Apart from this, however, the Commission voice the general opinion of medical officers serving in Malta, that a certain number of cases of simple continued fever bear a relation to Mediterranean fever, either as atypical cases or as mild early cases, in which the serum reaction is not obtainable, although found later. Such a case has lately been under my own care:—

Patient was under treatment in January of this year for slight fever and pains of a rheumatic type. The serum reaction was negative. He recovered and returned to duty. In April he again fell sick with fever and severe neuritis of first the right and later the left sciatic, pains in the sacro-iliac articulations, and swelling of his left knee. His serum reaction was tested several times and was negative. The temperature fell to normal, and the swelling and pains practically disappeared under treatment. One began to think of sending him away for change of air, when one day a report was received from the laboratory that his serum reacted 1 in 10 to Mediterranean fever. A few days later it reacted 1 in 50, and later 1 in 100.

These cases undoubtedly do occur, but in my experience they are the exception. As a rule, too, just as in the case just related,

they present certain clinical features such as long duration, rheumatism or neuritis, or synovitis and so on, that make them quite distinct, and though they may be returned as simple continued fever, in one's own mind one keeps them separate from the ordinary run of cases returned under that heading.

The total number of cases of simple continued fever admitted to hospital in Malta in the years 1902-1905 was 4,311. In Table IV. of the Commission's Reports for 1906, Majors McCulloch and Weir, R.A.M.C., have worked out some very interesting figures concerning these admissions, and showing the number of days they were under treatment in hospital:—

NUMBER OF DAYS UNDER TREATMENT OF CASES ADMITTED FOR SIMPLE CONTINUED FEVER, 1902-1905.

	Totals	5 days and under	5-10 days	10-15 days	15-20 days	Over 20 days
Totals	4311	591	2646	650	179	245
Percentage ..	—	13·7	61·4	15·1	4·1	5·7

This table is very interesting, and shows that—as they say—“roughly speaking 75 per cent. of the 4,311 cases” required “only a short stay in hospital,” *i.e.*, under ten days. They are inclined to look with suspicion on the remaining 25 per cent. as perhaps having been “mild or atypical cases of Mediterranean fever.” Personally, I am not prepared to go so far as this. I think that 25 per cent. is too high a percentage to rate the suspicious cases at, and that 10 per cent. would more nearly represent the possible atypical Mediterranean fever cases.

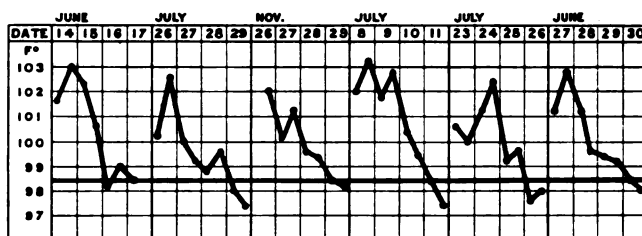
My own experience last year covered 172 cases admitted to the hospital of which I happen to be in charge, and most of which were under my immediate care. A table similar to that of Majors McCulloch and Weirs shows:—

	Totals	5 days and under	5-10 days	10-15 days	15-20 days	Over 20 days
Totals	172	65	81	18	4	4
Percentage ..	—	37·8	47·1	10·5	2·3	2·3

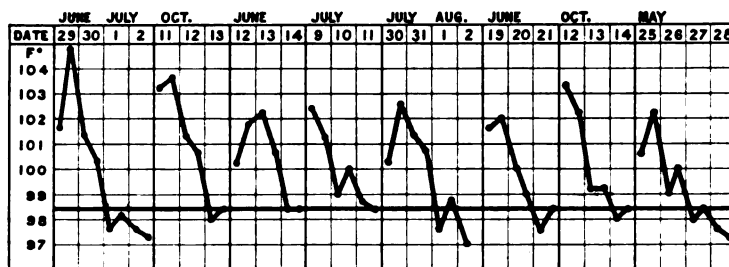
These figures are for one year only, and for one hospital in the Command, and, consequently, are not of the same value as those given in the other table; but still, they are of interest.

They show that 84·9 per cent. of the cases required less than ten days' treatment in hospital, and that 95·4 per cent. were able to go out in less than a fortnight, leaving 4·6 per cent. as belonging to the suspicious class. However, I am able to say that not one of all these cases developed Mediterranean fever during the year, and that only one of them was suspicious of being an atypical Mediterranean fever case. He has since left the Army, and I am unable to give any particulars of him. The serum reaction of all these cases was tested once at least—more often in the longer cases—and was always found to be negative.

CLASS A (1).



CLASS A (2).



The next point I would wish to draw attention to is the nature of these cases of fever from a clinical point of view. I have made out a selection of the temperature charts which are reproduced and which I venture to think will prove interesting. The ones chosen are those which appear to be the most typical of the disease or diseases, and which show most clearly the points to which I would like to draw attention. The cases seem to me to divide themselves naturally into two great classes which I have called A and B. Both have many points in common, and it may

be that the differences are only in degree. Still, there are also many points of difference. In class A, I would include all cases in which the temperature is raised for not exceeding three days, and in class B those in which the temperature is raised more than five days continuously. This is, of course, very rough, but it will serve. Under class A, it will be noticed, are given two sets of temperature charts, but of these I consider those marked (1) as representing the typical case of this fever. They show a febrile attack beginning abruptly, lasting three days, and falling to normal on the morning of the fourth day. These temperature charts are mostly of men who were already in hospital for some other complaint, so that we were able to observe the whole of the attack. Most of the cases admitted from barracks run a course like A (2), that is to say, that when they come in they have already had the fever on them for one or two days.

The symptoms in these cases are almost identical. The patient complains of the usual feverish symptoms, but is mainly troubled by frontal headache and "pains in the back," across the loins. The tongue is large and foul, thickly coated with a dirty-yellow or yellowish-grey fur, the abdomen is somewhat distended, there is a history of constipation, and the pulse is slow. There is no enlargement of the liver or spleen, the face is rather dull and the complexion muddy. Patient is inclined to sleep. There are no spots, and no pains in the shoulder tip.

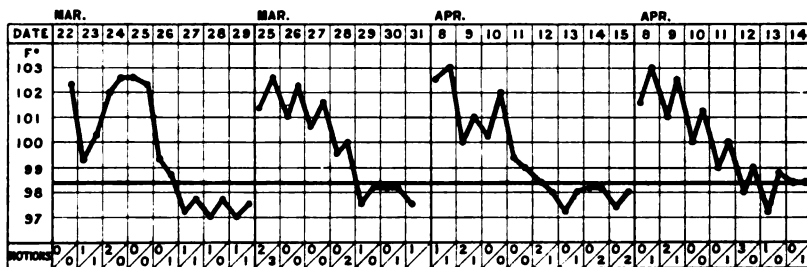
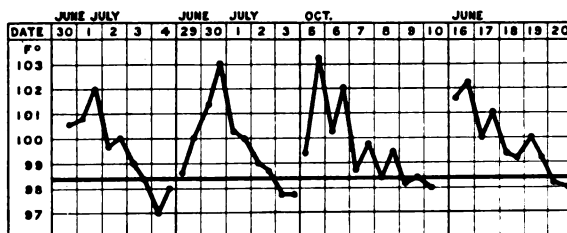
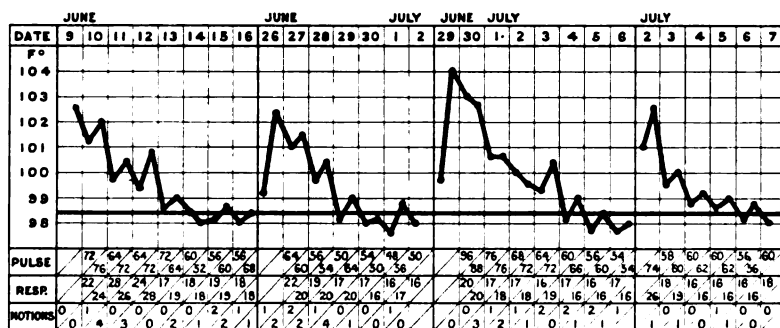
The routine treatment for these cases is simple. Calomel, with a saline draught later; a diaphoretic mixture or phenacetin with caffeine if the headache is severe. As the temperature begins to fall, fresh lemonade and an acid mixture are usually given. Convalescence is rapid, and they are usually fit to go out of hospital in seven or eight days.

Such are the class of cases which go to make up 75 per cent. of the cases in McCulloch and Weir's table, and 85 per cent. in mine. It is by far the largest class, and indeed, is quite the commonest form of fever I know. I have suffered from it myself several times, though not in Malta (so far), but in India and South Africa, and so have most men who have served abroad. Before modern methods of diagnosis were perfected, it was considered to be of malarial origin, and diagnosed remittent fever.

The second class of fever met with differs in many respects from the one I have just described. It usually lasts six or seven days, and the range of temperature reminds one very much of the ending up of a case of enteric fever; one finds the evening rise and morn-

ing fall gradually "spiking" down to normal. This is well shown in the temperature charts marked B. The history on admission of men suffering from this disease is much the same as those in class A. They rarely complain of having been feeling ill more than a day, but they are much more ill when they come in than

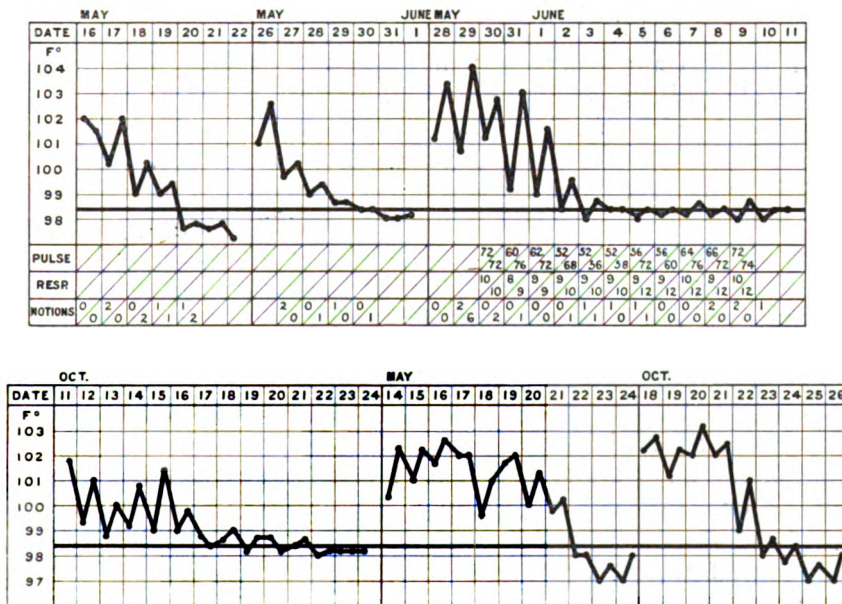
CLASS B.



the former. Whether the poison be an entirely different one or one of increased virulence, it is very powerful, and the patients are often very ill. The headache is usually very severe, the backache not so marked. The tongue is thickly coated as before, but shows a tendency to clean at the tip and edges, and the fur to become

creamy. I have never seen diarrhœa, and after purgatives the motions are watery and bilious. There is usually a good deal of distension, but no enlargement of the liver or spleen. I have never found any tenderness or gurgling in the right iliac fossa, nor any enteric spots. I have, however, frequently noticed a solitary spot, generally in the neighbourhood of the umbilicus, which at first looked suspiciously like the *Tâche rose lenticulaire*, but which on the next day was found to have developed into a tiny pustule. This

CLASS B.



is most probably an accident, but I have been struck by its very frequent occurrence in these cases. Another noticeable point is the appearance of the abdomen: the soft white skin with the veins just showing through it also remind one of enteric. The pulse is soft and very often compressible and dicrotic. It is slow, 55 to 70, and quite out of keeping with the temperature. The face is flushed, the eyes suffused, the lips dry with that peculiar quiver when an attempt is made to speak that one sees so commonly in enteric. Altogether the appearance of the patient is strikingly like that of a case of enteric fever in the early stage of a severe attack. It is a poison of intestinal origin I am convinced, and a very power-

ful one at that, but what it is is another question. It is not enteric and not paratyphoid, at all events in the ordinary acceptation, the serum reactions being invariably negative to these diseases.

The treatment does not require any special note. Calomel I consider my sheet anchor, beginning with 3 to 5 grains, repeating in smaller doses later on. Soda water and milk, beaten up eggs, tea, later on arrowroot, extract carnis, beef tea, and so on, as the temperature comes down. I have tried salol, beta-naphthol, and other intestinal disinfectants, but they are really not needed. The distension is not great, and is best controlled by calomel, which has an almost specific effect in improving the patient's condition. There is a good deal of weakness and debility left after an attack, and patients are generally in hospital two or three weeks before being allowed out even to light duty.

There is also a further series of cases which seems to be a sort of transition type between these two classes of fevers. They run a four or five days' course, the range of temperature resembling that of cases in class B, but the symptoms are much milder and more quickly recovered from.

These, then, are the two principal types of fever met with in this Island, which are returned as simple continued fever. Cases of paratyphoid also occur, but I am not concerned with them, as though they have so far been returned under this heading, I believe their existence is recognised in the new "Nomenclature of Diseases."

What then are these fevers? Clinically, in both classes, the symptoms all point to a poison of intestinal origin, and in class B to one resembling in many ways that of enteric or paratyphoid fever. Yet the cases in class B do not present the classical features of either of these diseases, and neither do they correspond in their duration, their severity nor their serum reactions. One is inclined to consider them infectious, either by the *Bacillus coli communis* itself or by some bacillus of the coli group lying somewhere between the *B. coli communis* and the paratyphoid.

As to the *causation* of these fevers the two principal factors appear to be the hot weather and chills. The tendency for "chills" to affect the abdomen, when one is abroad, is well known, in contradistinction to the respiratory organs, which appear to be their favourite objective at home. The ordinary attack of colic is a very much more painful complaint abroad than at home; vomiting and diarrhœa (not the result of ptomaine poisoning), congestion of the liver, colitis with diarrhœa of a dysenteric type, are all compara-

tively common affections in warm climates. After a hot day it is very pleasant to sit outside in the evening in trousers and shirt, and enjoy the evening breeze, but it is very dangerous. It is what the British soldier does, however, and in this Island in addition they bathe a great deal. They sit about on the rocks before and after, smoking their pipes, fishing perhaps, and in this way I think most of the damage is done. Last year's figures show a remarkable difference between regiments in barracks near the sea and those inland. Of the 172 cases in my hospital last year the majority were from corps as follows :—

1st Battalion Rifle Brigade ..	St. Andrew's Barracks ..	21 cases ..	9 months
4th " " " ..	St. George's " ..	76 cases ..	12 months
Royal Garrison Artillery, 8 Double Companies	Tigne " ..	59 cases ..	7 months

The strength of these units was approximately about 750 each. The difference in favour of the battalion in St. Andrew's Barracks is very marked. These barracks lie about half a mile inland from the sea and there is not quite so much temptation to bathe as in the others, and moreover, after bathing the men have an appreciable distance to walk back, uphill, and are not so tempted to sit about on the rocks.

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THE CARE OF THE FEET IN THE AMERICAN ARMY.

BY CAPTAIN C. R. SYLVESTER-BRADLEY.

Royal Army Medical Corps.

THE care of the infantry soldier's feet has become such an important factor in the effort to attain efficiency in our modern armies, that an insight to the method other nations adopt to secure success in this detail must certainly prove of some value to those interested in the subject of efficiency.

Through the courtesy of the Director-General of the United States Army Medical Service, I am able to give the latest methods that have been adopted in that army to ensure the preservation of the soldier's feet. It is interesting to note that they have no system of regimental bootmakers or regimental chiropodists, but that they consider the chief point to be aimed at is supplying properly fitting and suitable wearing apparel for the soldier's feet. New regulations for the supply of stockings, boots and shoes were issued in June of last year, and it is to this scheme I now wish to draw attention.

A great improvement has been made in the issue of stockings (socks), and it will be seen by the following table that on enlistment a recruit is supplied with fourteen pairs of stockings, eight pairs cotton and six pairs woollen. The cotton stockings are supplied in two weights, the "heavy weight," $10\frac{1}{2}$ inch size, to weigh 22 ozs. per dozen pairs, and the "light weight," $10\frac{1}{2}$ inch

ALLOWANCE OF STOCKINGS PER MAN.

	1st Year	2nd year	3rd year	Total
Cotton stockings	8	4	4	16
Woollen stockings	6	2	2	10
Total	14	6	6	26

size, 16 ozs. per dozen pairs. The woollen stockings are called "light weight," and are of a merino with 50 per cent. cotton, and the $10\frac{1}{2}$ inch size weighs 24 ozs. per dozen pairs. Most rigid rules are laid down for testing the permanency of the colour, and their shrinking properties; they must be seamless, and the leg, foot, heel and toe must be knitted from one continuous thread.

These three varieties of sock are all supplied in five sizes, viz., $9\frac{1}{2}$, 10, $10\frac{1}{2}$, 11, and $11\frac{1}{2}$ inches, so that there is no reason why every man should not be supplied with properly fitting socks.

On the line of march four pairs of socks are taken : one pair worn, one pair in personal kit (carried by the man), and two pairs in surplus kit ; this system considerably increases the facilities of keeping the soldier supplied with clean socks, one of the most important points to remember in the prevention of sore feet. The supply of cotton socks is very sound, as this allows the woollen ones



RUSSET GARRISON SHOES (Blucher Style).

to be kept solely for marching, and should prevent the chance of men marching in badly darned socks or socks that have become stiff from continuous washing.

The allowance of boots and shoes is even more generous than that of socks.

The following table shows the issue of boots and shoes per man during his first three years' service :—



RUSSET TANNED MARCHING SHOES (Blucher Style).
Orthopædic last. Double sole.



BARRACK SHOES (Orthopædic last).

ALLOWANCE OF BOOTS PER MAN.

	1st Year	2nd Year	3rd Year	Total
Black or russet calfskin	3	1	1	5
Marching	2	—	—	2
Barrack shoes	1	1	1	3
Total	6	2	2	10

From this table it will be seen that the recruit is supplied with five pairs of boots and one pair of barrack shoes in his first year.

The black or russet calfskin boots, or "garrison shoes" as they are called, are well made ordinary "walking out" boots with "unclumped" soles and "blocked out" or "box" toes. The marching boots are made in two weights, "single sole" and "double sole," a great improvement on the old style of heavy, "clumped sole" boot, which was used in all weathers and in all climates. The boot is made to fit well up round the ankle, the back of the boot from top to "heel seat" measuring 8 inches, a great advantage in a marching boot, as, however well a boot may fit, if it is "cut low" and does not fit round the ankle "rubbed heel" may be looked for as the inevitable result. The "box toe caps" are supplied to all patterns of boot, and anybody who has once worn them will never want to march in anything else. The barrack shoes are well made canvas and leather shoes, and are intended only for use indoors and going short distances, to latrines, &c.

The "sizing" of boots and shoes leaves nothing to be desired; "half sizes" are supplied from "fives" to "twelves" in length, and each "size" has five different "width sizes," viz., C, D, E, EE, and F.

The measurement of a No. 8 boot when finished would be as follows:—

	Heel	Instep	Ball of toe	Height of back at rear	HEEL				WIDTH	
					Length	Width	Across the breast	Height	Of sole or ball	Of shank
No. 8 "C" ..	13	9 $\frac{1}{8}$	8 $\frac{3}{4}$	8	3	2 $\frac{4}{16}$	2 $\frac{7}{16}$	1 $\frac{1}{8}$	3 $\frac{10}{12}$	2 $\frac{4}{12}$
No. 8 "D" ..	13 $\frac{1}{4}$	9 $\frac{3}{8}$	8 $\frac{5}{8}$	8	3	2 $\frac{9}{16}$	2 $\frac{8}{16}$	1 $\frac{1}{8}$	3 $\frac{11}{12}$	2 $\frac{5}{12}$
No. 8 "E" ..	13 $\frac{1}{2}$	9 $\frac{5}{8}$	9 $\frac{1}{4}$	8	3	2 $\frac{10}{16}$	2 $\frac{9}{16}$	1 $\frac{1}{8}$	4	2 $\frac{6}{12}$
No. 8 "EE" ..	13 $\frac{3}{4}$	9 $\frac{7}{8}$	9 $\frac{3}{4}$	8	3	2 $\frac{11}{16}$	2 $\frac{10}{16}$	1 $\frac{1}{8}$	4 $\frac{1}{12}$	2 $\frac{7}{12}$
No. 8 "F" ..	14	10 $\frac{1}{8}$	9 $\frac{5}{8}$	8	3	2 $\frac{12}{16}$	2 $\frac{11}{16}$	1 $\frac{1}{8}$	4 $\frac{2}{12}$	2 $\frac{8}{12}$

Ordinary commercial shoe polish is used on the garrison shoes, but the marching shoes are always kept oiled.

REPORT ON INEFFICIENCY CAUSED BY PUSTULAR SKIN ERUPTIONS AND THEIR ASSOCIATION WITH THE REGULATION FLANNEL SHIRT.

BY LIEUTENANT E. L. MOSS.

Royal Army Medical Corps.

As medical officer to the 2nd Battalion Royal Welsh Fusiliers, I have been greatly impressed by the number of men rendered temporarily inefficient and requiring admission to hospital on account of boils and pustular skin infections, the result of scratching or chafing prickly heat. I have strong reasons for believing that the regulation flannel shirt is largely responsible for the condition.

(1) To anyone doubting the efficacy of the regulation flannel shirt to produce irritation, so severe that scratching is a natural concomitant, and any tendency to prickly heat greatly aggravated, I would recommend the personal experiment of wearing such a shirt whilst taking exercise in an atmospheric temperature over 100° F., as has constantly been the duty of every soldier in Agra recently.

(2) During constant inspections I have not detected any but very mild cases of prickly heat amongst the Band, who have been wearing cotton shirts, whereas quite one-third of the men of every other company have prickly heat, with or without pustular eruptions, in varying degrees of severity.

(3) The men themselves unanimously testify that the flannel shirt is "too hot for this weather, brings out the prickly heat, and makes the itching worse." They tell me that while on guard duty is the worst time, as they are obliged to wear the flannel shirt for so long.

Reasons for Regarding Prickly Heat as a more than Trivial Complaint.—If the trouble was confined to the condition of miliaria sudamina or so-called prickly heat alone, the matter would be one of inconvenience only; but when men are filling the hospital beds with different degrees of general pustular skin eruptions and abscesses, with involvement of lymphatic glands and pyrexia in some cases, all directly attributable to scratching and infection of their already inflamed skins with pyogenic organisms, surely steps should be taken to do away with the cause of the primary affection; and if it be the regulation shirt let it be replaced during the hot season by a less irritating garment, *i.e.*, canvas or cotton.

One knows from experience in certain London dermatological

departments that in the treatment and prevention of sudaminal inflammatory skin diseases, attention to the kind of material worn next the skin in such cases is of prior importance, and to allow an irritating flannel next the skin would be severely criticised as bad treatment. Why not apply this generally accepted knowledge? To quote more exact data, there have recently been in the wards here over twenty cases of furunculosis requiring constant attention and local treatment, such as opening numerous boils and abscesses and treatment with pure phenol, &c., as well as numerous cases attending daily. The cases are often protracted and tend to recur. In many of these doubtless the treatment should have been cultivation of the pyogenic organisms from the special case, and subsequent inoculation with the sera obtained from the correct strain; but unfortunately there are no facilities for obtaining such sera or of making the necessary estimation of opsonic indices.

One had to rely upon such measures as the wearing and constant changing of cotton shirts, cutting and cleansing of the finger nails (which is an important point often overlooked), diurnal lysol, baths, local treatment with fomentations and strong solutions of perchloride of mercury, preventing excessive sweating as far as possible by keeping the wards cool with themantidotes and tatties, &c. Cases often get well rapidly, but require readmission for recurrence.

The provision of new cotton or canvas shirts will be met with objection. I have been assured that the men will get "chills," from lying under punkahs in sweat-saturated shirts. My reply is that the men do not lie about in sweaty shirts, but change into short pants and vest as soon as they reach their barrack rooms, many of them wearing pants and shoes only, and so far I have not been able to trace any bad effects to this practice.

Against the question of expense in providing new shirts for hot weather in the plains should be balanced the undesirable waste and expense of keeping men inefficient in hospital owing to lack of proper prophylaxis.

In conclusion, the severity and protracted nature of many of the cases had only to be witnessed to impress one with the need of prevention, especially so when the chief aggravating cause seemed clear, viz., the shirts. During the past three hot months in Agra (May to July) there have been more men rendered temporarily unfit from boils, secondary to prickly heat, than from any other complaint. This fact in itself testifies to the importance of the subject.

Clinical and other Notes.

THE DEPÔT, THE RECRUIT, AND THE SWEDISH DRILL.

To those who are now ready to admit that we have at last obtained a rational system of gymnastic training for the growing lads who form the bulk of our Army recruits, it is a continual regret that we still husband an irrational system of depôt professional training which nullifies the advantages of the former at every turn.

It is true that at certain stations the reasons for the new form of gymnastic training are so appreciated, that more rational ideas are applied to the depôt professional training; yet the vast majority of commanding officers still require so much from the recruit on joining the regiment, that in most cases the harrassed depôt Adjutant has no choice, by reason of the scanty time and barrack accommodation at his disposal, but to push his recruits through every item of the present drill and musketry syllabus, without regard to their health, growth, or overstrain.

The object of this short paper is to put forward a plea for the recruit; to endeavour to make it clear that in the near future the depôt should exist not only as a professional, but also as a physical, training school.

Our whole depôt training system is at present a paradox. The Guards, the biggest men in the Army, do not shoulder a rifle until the seventh week after enlistment; the Linesman is taught to carry, and move with, his rifle in the third week; the Militiaman, "the growing lad of seventeen," who is usually really quite a year younger, may be seen any day on the barrack square staggering under the weight of his rifle—often a tenth of his own weight—within a fortnight of joining the depôt.

Now the exaction of extreme energy from young and growing lads should be long delayed, and very gradually applied, because of the pernicious influence of extreme exertion upon the most susceptible and vital organs of the body (which are still immature, especially the heart and the lungs): this cannot fail to affect subsequent health and strength. Drill and training ought therefore to be extended over a lengthened period of time proportional to the state of individual development and bodily power. In other words, we must classify our depôt recruit and work him according to his classification.

At the present time at the majority of depôts there is absolutely no system, if we except the pernicious one of putting in sixty attendances, and being smart enough to satisfy the local inspector of gymnasia.

If ten men join on a certain day it would seem to be considered imperative that those ten men should spend their depôt service always in the same squad, both on the square and in the gymnasium. But surely

A., with a pulse rate of 130 on exertion, should not be pushed on so rapidly as B., with a pulse rate of 84. Many recruits do not improve as well as they would surely do if they were not compelled to move forward in the gymnasium *pari passu* with their drill on the square; they often run, for instance, over their distance and so have undue strain put upon their hearts. Again, owing to the want of system and the exigencies of the professional side of the dépôt, mixed squads may often be found in the gymnasium; that is, it is not an uncommon thing to find the recruit of yesterday drilling in the same squad as the man of three months' service. To get over these difficulties it should first be recognised that the primary function of the dépôt is to make the recruit physically fit to join the regiment; and secondly, that a three months' probationary service, under the present system, is not long enough.

So many extraneous affairs now enter into the life of the dépôt recruit that it is only by getting in gymnasium attendances when he can that he can fulfil the requirements of the regulations. He has to be vaccinated, to visit the dentist, to attend lectures and school, to take his turn on guard. He has also his share of week-end passes, and sometimes more than his share of, fatigues; and withal, the drill and musketry syllabus must be adhered to at all costs.

We want, then, a better organisation and less professional work at the dépôts, a minimum period of four months' dépôt training, at least two and if possible three gymnastic instructors.

If the Swedish drill is to fulfil its object it must have fair play; it is based on scientific grounds and calls for the close attention of the dépôt officers, who should at least have an elementary knowledge of the physiology and anatomy of man. There is no system of physical training, however perfect, that will not be entirely upset by a lad of 17 doubling for twenty minutes half an hour after his midday meal; or doing two hours extra drill in the evening with a nine pound rifle on his shoulder. The eternal barrack square drill is all against the recruit's development; he should, instead, be often taken cross-country marches, at least twice a week, many country dépôts being admirably situated for this exercise. Again, punishments involving physical exertion should be notified to the medical officer; and no extra drills should be permitted at a dépôt which involve doubling or carrying a rifle. Marches across country in gymnasium kit, without a rifle, are the best possible means of developing the growing lad; he should not carry a rifle on parade under any circumstances under two months of his joining; at the present time he often carries the rifle before he has learned to carry himself.

All these remarks apply with double force to the younger Militia recruits, in whose system of training there has been no modification for many years, and who form 75 per cent. of the recruits for the Line.

Surely no stranger *impasse* than this was ever arrived at. We work the Militia recruit at high pressure on the supposition that he will remain

in the Militia, but knowing all the time that he will most likely join the regular Army; when we proceed to apply a slow but certain system of physical training for his benefit, of which he was much more in need three months before, and which is even then deprived of much of its good effect by the hard and fast regulations of his dépôt professional training.

INOCULATION WITH YERSIN'S PLAGUE SERUM—A PERSONAL EXPERIENCE.

IN a recent number of the Corps Journal an officer of the Corps gave a vivid account of his personal experiences of an attack of plague, and I am tempted, therefore, to give my personal experience of inoculation with plague serum which I recently underwent with a view to minimise my chances of contracting that disease. I trust my experiences are exceptional—I believe them to be so—but at the same time, as it would seem that the illness I went, or rather am getting, through cannot be foreseen or avoided, I would suggest to any one contemplating being inoculated by its victim, and the following account of my adventures, before making up his mind as to which is the lesser evil. I regret I can only give in outline the course of my illness, indeed, I was scarcely in a position to keep notes, and my memory having been affected likewise, I cannot give full clinical details such as are desirable.

I left Mauritius for a month's leave in the Island of Réunion on March 30th, 1907, arriving there early the following morning, Easter Sunday, March 31st, 1907. As we anticipated, we were offered the choice of five days' quarantine or inoculation with plague serum, with personal report to the authorities for a week subsequent. All the passengers, some dozen in number, voted for inoculation; and I may say that so far as I know only two besides myself had any further symptoms; these two had, so I am informed, severe neuritis for about a fortnight afterwards. I need only say that I was in my usual robust health at the time, that the actual operation was performed with strict aseptic precautions by the Health Officer of the Port, and that the serum came from Paris, where I presume it was prepared with all due care. How much was injected I am unable to say, but I noticed that the needle drew blood, and imagine, therefore, that the serum passed direct into the circulation.

After many vexatious delays we arrived at St. Denis, the capital of the Island, late the same evening. I should like to digress here and give an account of the Island, or as much as I saw of it, as I fancy very few officers have been there, and for many reasons it is an interesting place; but this is not to my present purpose. I will merely remark it is backward and poverty-stricken in the last degree, the population is apathetic and idle, and no less than 85 per cent. of the people are unable to read or

write, and cultivation is almost entirely neglected. St. Denis is hot and unhealthy, the streets overgrown with weeds, the ditches full of stagnant water in which mosquitoes breed in thousands, and the shopkeepers spent their time, so far as I could see, in taking down and putting up their shutters, and sleeping in the interval. The first six days my companion, a captain in the Royal Garrison Artillery, and I spent in St. Denis, and during this time I felt generally out of sorts and disinclined for any exertion, and though not actually ill, felt decidedly "below par."

On Saturday, April 6th, we left St. Denis for Hell-Bourg, Salazie, 3,000 feet, arriving there after a twenty-mile drive through one of the most beautiful river gorges I have ever seen. That night I noticed a patch of what appeared to be urticaria over the left groin at the seat of inoculation, and later on another on the opposite side. The following morning my back and shoulders were likewise covered, and though feeling far from well I made some attempt to go out and explore the neighbourhood, but soon had to give it up and return to our humble inn. The same afternoon, *i.e.*, exactly a week after the inoculation, the rash had spread over the whole body, and I felt so ill that the local doctor had to be called in, an amiable old gentleman of some seventy summers, who had spent the last thirty-five years of his life in ministering to the humble wants of the local peasantry. I do not think I am being unkind by saying that his knowledge was not quite up to date, but what to my mind was of as great importance in an illness where skill, however great, could do little, was the old man's kindness and solicitude, for which I shall be ever grateful. By nightfall the urticarial rash had spread literally from the soles of the feet to the scalp; the palms of the hands and fingers were so swollen that I removed my signet ring with difficulty. The face was the only part of the body unaffected. The irritation was extreme and precisely of the same type as nettle-rash, but unaccompanied, as nettle-rash so usually is, with dyspeptic symptoms. There was no rise of temperature, and this was the case all through the illness.

The following morning (April 7th) the rash had gone, except that my hands were too swollen to allow flexion of the fingers. But I complained to my companion of a stiff neck, which he attributed to the open window. However, a short examination soon showed me that the pain was down the centre line of the spine from about the fifth cervical to the third or fourth dorsal vertebra, and this was followed by rheumatic pains, or pains of rheumatic character, in the shoulders and thighs, and it then began to dawn on me that I was in for something unpleasant. By evening I had to retire to bed, and by 7 p.m. acute neuritis had set in. The nerves of both shoulders and arms, the left more particularly, and both sciatics from the spine to the bend of the knee, were subject to continuous and violent pain, which seemed to flow in successive waves from the spine along the nerve trunks to their terminal filaments. The intercostal nerves joined in the nerve hurricane, though to a lesser extent, but with the exception

of the phrenic and cranial nerves I should be hard put to it to name any important nerves which entirely escaped.

The following morning, *i.e.*, twenty-four hours from the commencement of the pain in the neck, paralysis of the left shoulder muscles was complete, there was partial paralysis of the corresponding muscles on the opposite side, and the sciatica had passed off in some measure. I found myself able to walk with difficulty, but movement was frequently accompanied by burning, lightning twinges, such as are common in locomotor ataxia. So sharp and sudden were these stabs that I frequently turned round, under the impression that someone had struck me. As I lay there a fairly helpless object, my brain seemed also subject to the poison circulating in the blood. I became interested in the course and possible outcome of the disease, but in a peculiarly apathetic manner. I endeavoured to remember the Gray's Anatomy of my earlier years, and tried to puzzle out in a half-hearted manner the origin and distribution of certain special nerves, and whether the toxin would show a tender choice for my respiratory centre and treat it in the same manner as it had done my left brachial plexus, spinal accessory and circumflex nerves. I have since looked back with astonishment at the dull mental capabilities of these few days. I conclude that my cerebral faculties were partially exhausted by the trials of the previous night. I suppose the human frame is only capable of supporting a certain amount of agony. In all the chances and changes of this mortal life humorous incidents will obtrude themselves, and though undergoing a gruesome time, I could not forbear a smile when my companion brought down a dose of morphia from the local leech for my poor body. Two-thirds of a grain of morphia divided into three doses, the whole dissolved in a large tumbler of the thickest syrup! I took down the lot at one sitting, but how I managed it I do not know, and how I managed to hold on to it when down I cannot imagine, but I flatter myself there are few men of my age who can swallow a tumblerful of syrup and retain it. My room, I may say, soon became like a chemist's shop. My professional brother proposed a new remedy every few hours, and it was not until I was coming away that it dawned on me that I should have to pay for each one separately. Indeed, the drugs were valued at two-thirds more than the visitor's fees. The medicines were mostly made, he informed me, from medicinal herbs growing in his garden, they were dispensed by his wife, and mostly, I imagine, very harmless. The instructions on most of the bottles were, "A mouthful for a dose." Comprehensive, but a little vague! At this time I lay in a little *auberge* in the middle of the village, and those who have travelled off the main track in France can imagine what the sanitary arrangements were like. They were indescribably filthy. Bath there was none in the village. The good-natured *femme-de-chambre* was innocent of soap and water from her birth some thirty years before. My French of pure public school accent was as incomprehensible to her as her

bastard Creole-French was to me. The chief article of food is pork, which is driven from its garbage in the gutter to the side of the road, where a knife is put in its weazand, and thence to the table. It was too much for my tender stomach whose nerves were all in a jangle, and I had to fall back on other delicacies, the chief of which, and one I discarded as rapidly as the pork, was a stick on which were strung twenty miserable little birds, rather smaller than a sparrow, all skull and beak. They looked so reproachfully at me from their empty orbits that I promptly struck them off the menu. Snails and rice suffered the same fate. I was saved from further starvation by the British Consul, who proved a friend in need. If it had not been for the kindness and hospitality of himself and Mrs. Maxse I doubt whether I should have survived the ordeal. It would be occupying too much space to detail further my adventures in this benighted country. It was with feelings of thankfulness that I arrived in Mauritius and found myself once more in civilisation and looked after by my brother officers.

It was on April 25th that I returned. My condition at the end of the month was briefly as follows. The neuritis was still very bad in both shoulders, particularly the left, making sleep difficult without sedatives. I was unable to be in bed, not being able to bear any weight on my shoulders, and a swing-chair of ingenious make was called into requisition and proved decidedly useful. There was great wasting of the scapular muscles on both sides, the triceps being also involved; with this wasting was complete inability to rotate the humerus, raise it to the horizontal, or perform any or most of the ordinary movements of the joint. There was decided loss of memory, or rather inability to take in and assimilate any literature, as well as a peculiar and most provoking way of mixing up words in writing, by putting the termination of one word to the first syllable of another.

I must pass over the events of the next few weeks; suffice it to say that while my general health improved the other symptoms remained very much the same, except that the muscles continued to waste, and at a rate that gave considerable apprehension not only to myself but also to those who were looking after me.

At the end of May I embarked for England, a candidate for admission to King Edward VII.'s Hospital for Officers, arriving in London June 19th, rather the worse for the long train journey from Marseilles. My memory, as I have said, was as considerably affected as my body, and I cannot recollect my exact condition when admitted to King Edward VII.'s Hospital for Officers, and I can only speak in general terms. My general health had improved very considerably on the voyage, but the wasting of the muscles of both shoulders had continued, so that there seemed to be none whatever on the scapulæ and shoulders (the left worse), with, of course, total inability to perform those movements dependent on those muscles. The triceps on both sides were extremely

weak, there was a patch of anæsthesia on the forepart of the left thigh, a smaller one over the right knee, and the whole inner side of the left leg from knee to ankle was insensible to pin-pricks. The neuritis, though very considerably lessened, was more or less constant from the spine to the shoulders, and continuous sleep at night was impossible. On the whole, I think the circumflex nerves were more painful than the others. The shoulder-joints were fairly free on passive movement, but the creakiness and audible cracking sounds produced by them showed that adhesions were in process of formation. Treatment consisted in injections of strychnine into the muscles, massage and passive movements, and electrical treatment. Improvement was immediate, but by no means continuous. More than once I dropped back in a manner very disappointing both to myself and my excellent masseur; movements fairly easily performed would for some reason or other hang fire altogether or be done with difficulty, but by the middle of August, though by no means cured, it was considered that I might go down to the country for a month or so before further electrical treatment was undertaken.

I flattered myself that I was fairly out of my troubles, but I was not quite out of the clutches of mine enemy. About a fortnight ago the pains came back with very much their old vigour, worse, in fact, than at any other time since my departure from Mauritius. My arm became useless, and large patches of urticaria appeared on the thighs and shoulders; in fact, I went through a complete but smaller edition of my experience in Bourbon. In three or four days this largely passed off, but curiously enough my memory, which had improved considerably, again failed, and the peculiarity I have mentioned with regard to writing made itself evident in the same provoking manner. I rather think there is still some toxin lurking in the system, but time alone will show.

It is better, we are told, "to bear the ills we have than fly to others that we know not of," but I must honestly confess, if I were given the choice of plague or plague serum, I should feel inclined to vote for the former, provided it was not of the pneumonic variety.

N. M.

Note.—Since writing the above I have had another relapse, this time with urticaria on the face, with other symptoms the same. It may be a mere coincidence, but each relapse has been preceded by a train journey or a motor drive: the jolting of the one and vibration of the other appear so inimical to recovery that I am contemplating, not the purchase of a motor car, but a perambulator.—N. M.

TWO CASES OF MALIGNANT TERTIAN AGUE—FATAL RESULTS.

BY CAPTAIN A. L. OTWAY.
Royal Army Medical Corps.

Case 1.—Private A., 1st King's Regiment. Patient was admitted to hospital on January 2nd, 1907, with ague, after he had been detained in hospital one day; temperature 102° F. Treated with quinine, grs. x., b.i.d.

On the evening of January 2nd the orderly on duty states that the patient had a fit, apparently of an epileptic nature. An enema was given by the Assistant Surgeon on duty, also an injection of ether and strychnine; after about two hours the patient almost completely recovered consciousness, his condition was good during the night, and he slept well.

On the morning of January 3rd he was semi-conscious, but could be roused, and would assist himself to sit up in bed for physical examination; he was then extremely pale, but nothing abnormal was noticed about the pupils. On physical examination nothing of any significance was discovered excepting slight dulness at the base of the left lung. He was transferred from the ague ward to No. 12, to be under the immediate supervision of the orderly nursing staff. Stimulants were ordered, also hot fomentations to the back. He took his nourishment during the day, though he had to be roused to make him swallow. At 4 p.m. his temperature was normal, but at 9 p.m. his temperature rose to 102° F. Just previous to this he had an injection of ether and strychnine; he remained semi-conscious all night.

On the morning of January 4th his condition was very grave, his pulse being weak and fast, rate 140. Injection of digitalin, $\frac{1}{100}$ gr., also liq. strychnine, $\frac{1}{4}$ iii., and ether, $\frac{1}{4}$ x., were given. He was reported dangerously ill. A nutrient enema of eggs and brandy was also given. Nothing abnormal could be detected on physical examination at this time with the exception of there being a quantity of mucus in the lungs, this being due to his weak condition. His extremities were not cold, but his extreme pallor was a marked feature. At 12 noon on January 4th, his general condition was slightly better, though still very grave; respirations 60 per minute, pulse much stronger though still fast, rate 120. Another nutrient enema ordered for 1 p.m. and another for 4 p.m. 1 p.m.: Temperature 103° F., pulse 140, respirations 64; enema, and injection of digitalin, $\frac{1}{100}$ gr., given. 2 p.m.: Patient passed a loose yellow motion in bed. 4 p.m.: Pulse 140, respiration 68, temperature 103.2° F.; injection of digitalin, and nutrient enema. 6.15 p.m.: Pulse much weaker, rate 150, respiration 68, temperature 103° F.; injection of digitalin; condition very grave. 6.45 p.m.: Pulse 120, respiration 64, temperature 103° F.; nutrient enema. 7.45 p.m.: Patient died unconscious.

A blood examination was made in this case, and crescentic forms of the malarial parasite were seen; it was also noticed that there was apparently a large increase in finely granular eosinophile corpuscles; the blood corpuscles took up the stain badly. Quinine was not given hypodermically in this case owing to the patient's extreme weakness, as toxic effects were feared.

Post-mortem Examination.—*Thorax*: Serous effusion into the pericardium; heart healthy. Passive congestion of the bases of both lungs. Adhesions between the upper part of the thoracic wall and the lung on the right side. *Abdominal Cavity*: Liver congested and enlarged, capsule non-adherent, weight 80 ounces, no signs of abscess formation on section. Spleen enlarged and congested, capsule non-adherent, weight 21 ounces. The other abdominal organs were normal. *Brain*: Anæmic, otherwise healthy; membranes non-adherent. Smears were taken from the centre of the spleen pulp and stained by Romanowsky's method, with negative results.

Case 2.—Private C., 1st King's Regiment. Patient was admitted on December 19th, 1906, suffering from ague. He had continuous fever with morning remissions. His blood was examined on admission and on several subsequent occasions, and on each examination crescentic forms of the malarial parasite were found in large numbers. He was treated with quinine hypodermically, also strychnine and arsenic by the mouth. No decided enlargement of the liver or spleen could be made out. The patient was extremely anæmic during the whole course of his disease, and in a very debilitated condition.

Nothing unusual occurred in this case until the evening of January 6th, 1907, when he complained of a slight pain in his stomach, and said he had some diarrhœa during the day. Temperature 104° F., general condition good. Camphorydine mxx. , was given and the pain relieved.

At 8 a.m. on the morning of January 7th he was attacked with violent abdominal pain, accompanied by collapse; temperature 100·4° F.; his pulse could not be detected at wrists. Digitalin $\frac{1}{100}$ gr., and morphia $\frac{1}{4}$ gr., and ether were given hypodermically, also stimulants by the mouth. Nothing definite could be ascertained on physical examination, as his abdomen was very rigid, though it moved slightly on respiration: the pain was referred to the whole of the abdomen. On palpation and pressure, he complained of acute pain in the right iliac fossa, about 1½ inches from the middle point of Poupart's ligament. Hot compress applied to the abdomen and turpentine enema given. 9.30 a.m.: morphia, $\frac{1}{4}$ gr.; pain still severe, pulse 150, and respiration 48. 10.15 a.m.: Pain easier, probably due to the morphia; pulse still imperceptible at the wrist; condition very grave. 10.45 a.m.: Case seen in consultation with Lieutenant-Colonel H. Carr, R.A.M.C., S.M.O., Captain W. H. Odum, R.A.M.C., and Captain B. B. Paymaster, I.M.S. It was decided that there was some inflammation in the region of the appendix,

or possibly some minute perforation of the intestine, giving rise to the symptoms of peritonitis present, and it was agreed that the only hope for the patient was immediate abdominal section, preferably under local anæsthesia, owing to his condition. 11.30 a.m. : Patient died suddenly.

Post mortem.—*Abdomen* : On the abdomen being opened it was found that there was a large quantity of fluid of a non-inflammatory nature. The stomach and intestines were removed, and after being tightly ligatured at the rectal end, were filled from the stomach with water; no perforation could be detected. The intestines looked perfectly healthy, and no signs of disease could be seen, even after they had been slightly slit up in their entirety. *Bladder* : Healthy, and on being distended with water no leakage was seen. *Liver* : Congested, capsule non-adherent, weight 80 ounces, no signs of abscess formation. *Spleen* : Congested, capsule non-adherent, weight 26 ounces. *Kidneys* : Healthy. *Lungs and Heart* : Normal.

No pathological changes having been observed which would account for the coma and cerebral symptoms in the one case, and the severe abdominal pain and collapse in the other, it must be concluded that death resulted from malaria directly in both cases.

NOTES ON THE *POST-MORTEM* EXAMINATION OF A CASE OF KALA-AZAR CONTRACTED IN CRETE.

BY CAPTAIN G. J. STONEY ARCHER.
Royal Army Medical Corps.

THE following are notes of the *post-mortem* examination of the case of kala-azar contracted in Crete, published in the September number of the Journal. Unfortunately, Lance-Corporal S. died when I was away in the South of Ireland, and the *post-mortem* was performed by Lieutenant McCammon, R.A.M.C., and Dr. Symmers, the Professor of Pathology at Queen's College, Belfast, to whom I am indebted for these notes.

Body.—Was fairly well nourished; there were irregular erythematous patches over chin, chest and abdomen; hypostasis in dependent parts with abundant purpuric eruption over the back of the shoulders, consisting of minute, almost papular elevations, the size of a pin's head, covering an area equal in extent to the palms of the outstretched hands. Body considerably jaundiced, in particular the face, neck, chest and conjunctiva; pupils slightly dilated; slight œdema of feet.

Heart.—Pericardial sac contained about 100 cc. of yellowish, slightly turbid fluid; no petechiæ on surface of heart, but considerable congestion of capillaries at the back of the heart at the base. On section it contained a quantity of large *ante-mortem* white clot; the muscle was firm and red, being apparently normal; valves normal.

Lungs.—The pulmonary surface of the pericardium on the left side was markedly hyperæmic, and showed a large number of minute petechiæ. Left lung: The pleural cavity contained a quantity of turbid, slightly blood-stained serum; there was marked recent pleurisy over ower half of upper lobe, and to a lesser extent over the anterior portion of the lower lobe; lung weighed 2 lbs. 7 ozs. On section, it showed in the upper lobe a pneumonic condition in the stage of red hepatisation, which at the lowermost margin of the lung passed into the grey stage. The lower lobe was throughout greatly increased in density, very congested and oedematous, but apparently not consolidated. Right lung was normal throughout.

Liver.—Weighed 7 lbs. 9 ozs. The enlargement principally affected the antero-posterior diameter; the surface of the organ was perfectly smooth and presented a mottled appearance, due to pale yellow areas alternating with somewhat purplish streaks scattered universally over the whole surface of the organ. The gall-bladder was filled with clear honey-coloured bile. On section, the organ was also mottled in appearance; the prevailing tone corresponded to a somewhat yellow tint interspersed with reddish areas; the lobules were easily defined, and most of them appeared to be partly loaded with fat; the consistence was firm, but showed no naked-eye appearance of cirrhosis. Measurements in the antero-posterior diameter was 10 inches, and in the transverse diameter was very nearly 10 inches.

Spleen.—Weighed 2 lbs. 4 ozs., was considerably enlarged, and measured in circumference at its longest diameter 22 inches, and at its transverse diameter 12½ inches. The surface of the organ was perfectly smooth; there was no perisplenitis. On section, the organ was found to be engorged with blood, and was of a dark, deep-brown colour throughout, intensified to an almost black appearance in irregular areas throughout the upper half of the organ; fairly firm in consistence, but it could be easily wounded by pressure; the Malpighian corpuscles were nowhere visible, and there was no evident increase of fibrous trabeculæ.

Pancreas.—Appeared to be normal throughout, but perhaps at the extreme tail it was hyperæmic.

Suprarenal glands.—Apparently normal; the right on being opened showed a complete absence of fatty change in the medulla.

Kidneys.—The organs were paler than usual; the extent of the cortex was to the medulla as 1 is to 3; the capsule stripped with ease, leaving a somewhat pallid surface; about the central portion of the right organ, the interpyramidal cortex was marked off from the rest of the organ by being much paler and apparently in a condition of fatty degeneration. Right organ was in a similar condition, but perhaps the pallid fatty areas of the cortex were more extensive; the Malpighian corpuscles were not unduly prominent, and the pelves of the organs were hyperæmic, but to a very slight degree.

Stomach.—The rugæ were particularly well marked, and the mucous membrane was covered with a somewhat thickish layer of mucoid matter; the mucous membrane was also in an extremely congested condition, accompanied by small hæmorrhages, particularly in the smaller curvature of the organ, the whole amounting practically to an acute gastritis.

Intestines, small.—There were broad areas, often several inches long, of marked hyperæmia of the mucous coat throughout the whole gut, from the stomach to the cæcum; Peyer's patches were distinctly visible and uniformly hyperæmic, but not tumefied; the mesenteric glands corresponding to the small intestine were swollen to the size of haricot beans, particularly in the neighbourhood of the jejunum. The solitary follicles were distinctly visible in the last ten inches of gut, and in the intermediate neighbourhood of the ileocolic valve they were not only swollen but discoloured; the cæcum was also hyperæmic as to its mucous coat. The colon and rectum were normal.

Urinary bladder.—Was somewhat hyperæmic internally, but was otherwise normal.

Thyroids.—Attached to these were the apparently normal parathyroids.

Tongue.—The lymphatic tissue at the base of the tongue was markedly enlarged and hyperæmic.

Brain.—On opening the dura a considerable quantity of bile-stained fluid escaped; over left, the dura was lined by a thin smear of recently precipitated lymph; the pia arachnoid was lifted from the surface of the brain by a quantity of clear fluid; the pia mater was also thickened, and in several places, particularly near the vertex, partially attached to the dura by some perfectly white fibrous tissue arranged in lines and presenting numerous minute pin-head elevations. The brain generally was extremely anæmic.

REPORT ON SEVEN CASES OF GONORRHŒAL RHEUMATISM
TREATED BY ANTI-GONOCOCCUS SERUM (BURROUGHS
WELLCOME AND CO.)

By MAJOR F. J. W. PORTER, D.S.O.
Royal Army Medical Corps.

(1) DRIVER N., admitted February 21st, 1906, with gonorrhœa (gonococcus present in urethral discharge). On February 24th, 1906, the right metacarpo-phalangeal joint was found much enlarged and painful, and also lower lumbar spinal, and both shoulder-joints. On February 28th, 1906, both plantar fasciæ and the left knee-joint were painful, but with little swelling or redness. The temperature, with the exception of one or two slight rises, had been normal. On March 8th, 1906, the following parts were affected: Right thumb, both shoulders, joints of lower spine, left

plantar fascia, left knee. On this date 25 cc. anti-gonococcus serum (Burroughs, Wellcome and Co.) were injected in to one flank. It caused a good deal of local reaction and a rise of temperature to 101.2° F. On March 9th, 1906, the temperature was normal. There was no pain in the left knee, though yesterday it was so painful that he could not bend it. Left plantar fascia, back, and left shoulder were much better; right thumb same; right shoulder bad. Second injection of 25 cc. serum caused rise of temperature to 102° F. The same dose of serum was injected on the 10th and 14th. The whole of the joints cleared up absolutely, and he was discharged to duty on May 5th, 1906.

(2) Private G., admitted April 27th, 1906, with gonorrhœa (coccus found in pus). May 4th, 1906, the right thumb was swollen. May 5th, 1906, left ankle-joint very swollen, red and shiny. It appeared as though it was going to suppurate. Subsequently both wrists, back, both shoulders, both elbows and several finger-joints became affected. Six doses of anti-gonococcus were given, viz., on May 8th, 9th, 10th, 11th, 19th and 20th. The urethral discharge ceased on May 22nd, and he was discharged to duty on May 25th.

(3) Private S., admitted August 26th, 1906, with conjunctivitis and inflammation of right hip and right ankle. Gonorrhœa present and coccus found. 25 cc. anti-gonococcus serum injected on September 6th, 7th, 8th and 9th. Rapid improvement resulted, and he was discharged to duty on September 26th, 1906. In this case a good deal of urticaria followed some of the injections.

(4) Private B., admitted November 1st, 1906, for synovitis of knee, which he stated he had hurt on the 18th ultimo, but he had done his duty up till day before admission. Temperature normal; profuse urethral discharge. The joint was aspirated and gonococci found in fluid. Four injections of anti-gonococcus serum, 25 cc., on November 1st, 2nd, 3rd and 4th. No other joints became affected, but he had a relapse about December 25th, for which two more injections were given, and he was discharged to duty January 11th, 1907. Urticaria was present after one of the injections, and it was noted that the urethral discharge disappeared more rapidly than usual.

(5) Lance-Corporal C., admitted November 22nd, 1906, with profuse urethral discharge, containing gonococci. Left ankle became much swollen and painful on November 29th. The right wrist and left knee became affected soon afterwards. On November 30th, 1906, and three following days 25 cc. serum were given. On November 13th, 14th and 15th three more doses of 25 cc. were given. Patient became very anæmic and much wasted. There was a good deal of mental depression and an obstinate catarrhal ophthalmia affecting both eyes. The discharge ceased on December 16th, and under massage and liberal diet he gradually recovered and was discharged to sick furlough with perfect movement of all his joints on February 28th, 1907.

(6) Private L., admitted December 18th, 1906, with a profuse urethral discharge and stiffness and swelling of left hip, left shoulder, right knee and left ankle. Temperature normal. 25 cc. anti-gonococcus serum given on 20th, repeated on 21st, 23rd, 24th, 26th and 28th. The right knee was aspirated on the 26th, and gonococci found in the fluid. The symptoms improved fairly rapidly, but he got a relapse about January 12th, 1907. 25 cc. of serum were again given and acted like a charm on his pains. From this date he began to get a rise of temperature and a painful condition of several joints. He became very thin and anæmic. Under ordinary treatment he recovered, and was discharged to sick furlough on March 14th, 1907, with perfect movement of all his joints. Urticaria was produced by several of the injections.

CASE REPORTED BY CAPTAIN H. O. B. BROWNE-MASON, R.A.M.C.

(7) Private H., admitted to Rochester Row June 20th, 1906, with gonorrhœa. Acute inflammation of left shoulder, elbow and wrist July 1st. 20 cc. anti-gonococcus serum given on July 5th. It was noted next morning that the temperature was lower and pain less. July 8th 20 cc. given. Distinct improvement resulted, with less pain, and the discharge became much less profuse. July 9th, third injection, 25 cc.; temperature has fallen to normal. 12th, fourth injection, 25 cc.; pain much less. I consider the case was much benefited by the serum, though the last injection produced marked feverish reaction, lasting forty-eight hours.

Considering the large number of cases of gonorrhœa which come under treatment in the Army, cases of gonorrhœal rheumatism are by no means plentiful. The disease is very apt to be followed by permanent and disabling stiffness of the joints affected. It appears rather striking that no less than six consecutive very severe cases of this disease occurring in the one hospital should have been followed by complete recovery, and that in four cases recovery was very rapid. The diagnosis in all these six cases was confirmed by the microscope, and I have no doubt that the seventh case was also genuine.

I think, in the light of the experience afforded by these cases, one ought to start the injections *immediately* on the first appearance of joint trouble, and give them daily, in severe cases, for at least five or six doses. For cases in which chronic joint changes have occurred, I do not think the serum is of the slightest benefit.

It was noticed in most of the cases that the discharge diminished, and in some cases disappeared, long before it usually does.

Urethral injections, by means of a syringe, were used in all the cases, in addition to the serum injections.

A NOTE ON THE SERVICE WATERCART.

BY MAJOR R. J. BLACKHAM.

Royal Army Medical Corps.

IN the Parkes Memorial Prize Essay for 1904, Lieutenant-Colonel Caldwell wrote: "In connection with the subject of drinking water in the field, recent proposals for the supply of safe water to troops on Service are of great interest; as far as can be judged at present, the adoption of these proposals would appear to hold out excellent hopes, but only actual experience can prove whether the measures suggested will come within the limits of practical sanitation."

In the following notes I offer some testimony to the efficacy, under Service conditions, of the "recent proposals" referred to, and some proof that they *have* come "within the limits of practical sanitation."

During the recent manœuvres in Wiltshire, Lieutenant-Colonel Caldwell was detailed as Sanitary and Staff Officer with the Northern Force, Southern Command. In the course of the performance of the duties of his appointment, Lieutenant-Colonel Caldwell took a sample of water from the River Wyley, both before and after it had passed through the Service watercart. Some difficulty was experienced in obtaining bottles, as the troops were operating under strictly Service conditions, but after some persuasion the village blacksmith was induced to produce a couple of quart bottles with corks. The bottles and corks were carefully "scalded," and the samples sent to the District Laboratory, at Devonport, arriving the day after despatch.

On arrival the samples of water were examined for the presence of *Bacillus coli communis*, according to the method recommended by Dr. Thresh in his admirable work on "Waters and Water Supplies" (page 351). The river water gave unmistakeable evidence of *B. coli* in so low a dilution as 1 cc., whereas 20 cc. of the water which had passed through the Service watercart showed no evidence of coliform organisms. The chemical constituents of both waters were within the limit prescribed for a "good potable water."

This bears out the opinion expressed by Lieutenant-Colonel Caldwell in 1904: "It does not appear likely that the introduction of a chemical laboratory into the field is likely to be followed by any particular benefit. An incomplete analysis is valueless, it tells of danger, but cannot tell of safety, and it is impossible to carry out any analysis but an incomplete one under the conditions of field service, and for this reason any such attempt should be abandoned. Water (water being naturally the main subject for an analysis) might, for instance, give excellent results when examined chemically, and might at the same time be swarming with an extensive variety of disease-producing germs. These latter could not possibly be detected without recourse to appropriate bacteriological methods, and such methods could not find practical application beyond

the walls of a properly equipped laboratory" ("Prevention of Disease in Armies in the Field," p. 149).

From my experience it is difficult to understand Major Seaman's assertion that in the Russo-Japanese War the Japanese medical officer was "with the first screen of scouts with his microscope and chemicals testing and labelling wells, so that the army to follow shall drink no contaminated water" ("Military Hygiene," Appendix). If the medical officer was actually in this position, thus equipped, it was sad waste of energy, as his "labels" were, in the light of modern research, not worth the paper they were written on.

In conclusion, although it is clearly fallacious to generalise from a single experience, I consider that this experiment was, on the whole, a fair test of the cart working under Service conditions, and if supported by similar results in the work of other officers, should lead us to endorse Major Faichnie's opinion that "for the main source of supply of pure water (for military purposes) nothing seems better than the new pattern Army watercart" ("Water Supplies in Camp, on the March, and in Battle," *British Medical Journal*, August 31st, 1907).

NOTES ON EYE CASES, RAWAL PINDI, INDIA.

By MAJOR T. W. GIBBARD.
Royal Army Medical Corps.

Injuries.—CASE 1.—Captain P. received a blow from a racquet ball on the left eye on March 3rd, 1906. I saw him two hours afterwards; he was pale and faint, and complained of loss of sight of the left eye, in which there was severe pain. Examination showed ecchymosis of both lids of the left eye, the cornea was hazy, the anterior chamber contained blood, the iris was three-quarters dilated and oval, and did not react to accommodation or light. The lens was not dislocated. The vitreous, choroid and retina could not be examined on account of the cloudiness of the cornea and the hyphemia. He had perception of light only in this eye, but projection was good. An ice-bag was applied, and the right eye covered with a bandage. After forty-eight hours the ice was discontinued, and hot boric lotion used every two hours. In four days the hyphemia and cloudiness of the cornea had disappeared. Small hæmorrhages were to be seen in the vitreous.

On March 9th he could count fingers at one metre, but the pupil was still irregular, three-quarters dilated and oval, and there was distinct circum-corneal congestion.

On March 17th the right eye was left uncovered, and a shade used for the left. Hot fomentations were stopped, and homatropine used, which fully dilated the pupil.

March 22nd.—Left iris reacted fully to eserine, but twenty-four hours afterwards the pupil was three-quarters dilated again.

March 24th.—No sign of the vitreous hæmorrhages. Vision, R. $\frac{6}{8}$, L. $\frac{1}{8}$. Is unable to read clearly. To use eserine salicylate, gr. $\frac{1}{800}$, in left eye every morning.

March 28th.—The left iris is gradually regaining power; thirty-six hours after using eserine the pupil is only half dilated. Eserine to be used every other day.

April 5th.—Eserine stopped. The left pupil is now only slightly larger than the right, and returns to this condition after the eserine has been stopped. Retinoscopy shows no error of refraction in either eye, but + 1 sphere for the left eye clears the vision for reading and has been ordered.

June 10th.—Left pupil still very slightly larger than the right. To use + .5 sphere for left eye for reading instead of + 1 sphere, which now seems too strong. Power of accommodation is returning. Vision, $\frac{6}{8}$ each eye, and has been so since April 7th.

Patient proceeded home on leave one month later. At this time there was no difference noticeable between the two eyes, both pupils being the same size, and reacting to light. The only defect left was some difficulty in reading without a glass (+ .5 sp.) for the left eye.

In this case the use of eserine apparently exercised a beneficial effect in exercising the muscle of the iris by contracting the pupil and producing a spasm of accommodation by contracting the ciliary muscle.

CASE 2.—Gunner C., No. 6 Mountain Battery, was "flicked" by a mule's tail in the left eye on January 13th, 1906. Three days later the vision of this eye became "misty." He reported sick on January 26th. At this time the right eye was normal, but there was iridocyclitis of the left, and the usual treatment for such cases was adopted.

He was first seen by me on February 1st, when I found acute iridocyclitis of the left eye, and marked symptoms of sympathetic ophthalmia of the right. There was a small scar to be seen in the ciliary region of the left eye, just above and close to the margin of the cornea. At this stage it was useless removing the left eye, since it was probable that the vision of that eye would be better in the end than the right.

Vigorous treatment was adopted; leeches, atropine, &c., were used, but with little apparent benefit beyond keeping the iris of the right eye clear of the central portion of the lens.

In August, 1906, that is seven months after the injury, he had perception of light only in the left eye, and $\frac{4}{5}$ in the right.

He was sent to England early in the trooping season; the vision of the right eye was improving slowly, and he could count fingers at one metre with the left eye.

This case serves to remind us of the serious consequences which may

follow even a trivial injury in the ciliary region, and of the importance of watching the uninjured eye in such cases.

CASE 3.—Gunner R., No. 5 Mountain Battery, was admitted to hospital on January 27th, 1906, suffering from the effects of a blow from the fist on the right eye. The injury was received on January 24th; the man was knocked down but not rendered unconscious.

The day after the injury he noticed that if when reading he covered the left eye "everything seemed jumbled up," but that he could see fairly well in the distance.

On examination I found ecchymosis of both lids (right eye), and sub-conjunctival hæmorrhage limited to the outer side of the cornea. The pupils were equal and active, the cornea, anterior chamber and lens normal, vitreous clear, tension normal. There was no detachment of the retina. Vision, R. $\frac{6}{36}$, L. $\frac{6}{6}$.

When the man was sent to my ward it was suggested that he was malingering defective vision, or, at any rate, making the most of the blow; but careful examination showed a small effusion of lymph below and slightly to the outer side of the optic disc, partly covering one of the arteries just after leaving the margin of the disc. There was also distinct cloudiness of the retina about four disc lengths from the optic nerve, and in the vicinity of the macula, due probably to œdema of the retina, and accounting for the defect of vision. Having no perimeter it was not possible to take the field of vision accurately, but it did not appear to be contracted.

Both eyes were covered with a bandage to give them perfect rest, and the pupil was kept dilated with atropine for fourteen days. There was no error of refraction. Iodide of potassium was given internally, and oleate of mercury (10 per cent.) applied daily to the right temple.

Fourteen days after the injury the left eye was left uncovered, and the right protected by a shade only. The iodide of potassium was continued.

On February 8th his vision was R. $\frac{6}{12}$, L. $\frac{6}{6}$, and on March 5th R. $\frac{6}{6}$, L. $\frac{6}{6}$. A week later he left the hospital having completely recovered, his vision for distance and reading being normal.

This was a fairly typical case of commotio retinæ following a contusion of the eyeball. The cloudiness of the retina had entirely disappeared seven days after the injury, but on discharge there was still to be seen a small band of lymph running over the vessels below the margin of the disc.

Malingering.—CASE 1.—Private S. was transferred, 300 miles, for my opinion, on August 23rd, 1906. He stated that he saw floating bodies in front of both eyes, and that his vision was so bad that he could not see the target clearly at 500 yards. From his case sheet I gathered that his statements were so conflicting that no conclusion could be arrived at as regards his vision.

Before going into his case, I warned him that it would be useless malingering since I should have no difficulty in finding it out. On examination I found both eyes perfectly normal, and his vision with each eye $\frac{6}{6}$! The man was sent back to duty.

CASE 2.—Private M., Royal Munster Fusiliers, was sent to me on September 24th, 1906, with a note to the effect that it was thought he was malingering. He complained of total blindness of the left eye, that he could not distinguish light from darkness; with the right eye his vision, he stated, was equal to $\frac{6}{6}$, but he could probably see more.

To ascertain whether he was malingering, I put him through the following tests:—(a) A lighted candle was held in front of the right eye and then carried round to the left, so that he could not possibly see it on account of the dorsum of the nose except with the left eye; he stated that he could see the candle clearly, thus proving that he could see a candle at 3 feet with the left eye. The candle was then held directly in front of him at a distance of 3 feet and the right eye covered; he stated that he could not see the candle. The right eye was then uncovered and the left covered: he stated that he could now see the candle. (b) He was told to look at his left hand with the supposed blind eye (left), the right being covered; he looked in every direction except the correct one. A blind man looks immediately in the proper direction, since he knows the position of the hand by a sense of feeling. (c) He was placed 12 feet from a wall on which was hung a black object (the lid of a narrow card-board box, 8 inches by 2 inches) and a + 12 prism was placed in front of the right eye, the left being uncovered. He stated that he saw "two" images, one above the other, when the prism was base up, and side by side when base out, showing that he was malingering. (d) Whilst standing in the same position, and looking at the same object, the left eye was covered and a prism (+ 12) put in front of the right eye half over the pupil, and he stated that he saw double. The left eye was then uncovered and at the same time the prism passed right over the pupil of the right eye, and he still saw double. This again showed that he could see with the left eye. (e) In the same position a + .50 sphere was put in front of the left eye and spheres amounting to + 26 in front of the right. He stated that he could see the black object "fairly" clearly. A + 4 sphere was then added to those in front of the right eye, making + 30 in all, and he saw the object "quite" clearly. (f) The coloured letter test was then tried, red and black letters being written alternately on a sheet of white paper, a red glass placed in front of the right eye and the left eye left uncovered. He read all the letters, and therefore must have read the red letters with the left eye. There was no error of refraction, and ophthalmoscopic examination showed both eyes to be normal. It was a clear case of malingering, and was reported as such.

Diplopia.—The two following cases of diplopia may be of interest.

CASE 1.—Sergeant M., 1st Royal Irish Regiment, reported sick on

April 14th, 1906, stating that when he got up the previous morning he noticed that he saw double, especially when looking to the left. His age was 32 years. He had syphilis in 1898. Examination showed slight paralysis of the left external rectus and marked secondary deviation of the right internal rectus when looking at an object to the left.

With a green glass in front of the right eye and a red in front of the left the red image was seen about 1 foot to the left of the green when the candle was placed directly in front of the patient. When the candle was moved to the right the images came together, and when to the left they separated until 3 feet apart. That is, there was homonymous diplopia to the left, showing convergence, and therefore an abduction effected, viz., the left external rectus (6th nerve). There was only a slight error of refraction, the media were clear, and there were no fundus changes. He was put on potass. iodid., gr. x., with liquor hydrarg. perchlor., ʒss. t.d.s., and an inunction of oleate of mercury, 10 per cent., applied to left temple every evening.

On April 24th, *i.e.*, after ten days, the images were only 2 inches apart when looking at the candle placed directly in front, and 1 foot apart when moved to the left. Binocular diplopia was still present.

Ten days later the muscle had completely regained its power, there was only one image even when the candle was moved to the left, the diplopia had disappeared, and the man had no more trouble.

CASE 2.—Colonel X. was seen by me on December 9th, 1906, aged 49. He gave a history of having suddenly felt giddy three days previously, and of having seen double since then. The diplopia disappeared immediately one eye was covered, showing that it was binocular, and probably due to a muscular disturbance. Had had three attacks of giddiness during the last three days. There were no symptoms of tabes, or of any nerve affection. No albuminuria.

Examination revealed slight paresis of the left external rectus muscle, the images being at first $\frac{3}{4}$ inch apart when the candle was held directly in front, and 2 inches apart when moved to the left. The paresis was limited to this particular muscle; no other muscles were affected. Ophthalmoscopic examination showed no changes. The eyes presented a normal appearance, pupils reacted to accommodation and light, tension normal; it was only by the use of Maddox rods that the paresis could be demonstrated.

Three days later, that is, on December 12th, the images were nearly overlapping in the first position, and $\frac{3}{4}$ inch apart in the second. On December 18th the diplopia had disappeared and there was only one image in any position.

The treatment was mercury, iodide of potassium, and rest (no brain work allowed and only light exercise).

To enter into a discussion as to the cause or locality of the affection of the 6th nerve in this case would take up too much space. These two

cases of diplopia are quoted to illustrate how rapidly paresis of one of the small eye muscles may disappear.

Errors of Refraction.—Of the numbers of cases of errors of refraction seen by me during the year it is difficult to select any which are of special interest, but the following case of myopic astigmatism may serve to illustrate the useful work there is to be done in the Army in this branch of ophthalmology.

Corporal J., Royal Irish Regiment, a bandsman, aged 30, service fourteen years. Vision always defective, but getting worse during the past year. States that he is now unable to see the target clearly at 200 yards. His vision is so bad that, though he is one of the best men in the band, it is thought that he must be invalided, since he can only now play by ear, and cannot learn new pieces since he is unable to see the music.

Vision, R. $\frac{6}{80}$, L. $\frac{1}{80}$. Reads right eye D. .8 at 6 inches, left eye D. = 4 at 8 inches.

Slight myopic crescent each eye; no macular changes.

Retinoscopy under atropine :—

$$\begin{array}{rcl}
 \text{R.} & \begin{array}{|l} \hline -.75 \\ \hline -.25 \\ \hline \end{array} & \begin{array}{l} \bar{c} \quad \begin{array}{r} -2.5 \text{ sp.} \\ \hline -1.5 \text{ cyl. vertical} \end{array} = \frac{6}{6} \end{array} \\
 \\
 \text{L.} & \begin{array}{|l} \hline -4 \\ \hline -6 \\ \hline \end{array} & \begin{array}{l} \bar{c} \quad \begin{array}{r} -5 \text{ sp.} \\ \hline -2 \text{ cyl. 20 down and in} \end{array} = \frac{6}{8} \end{array}
 \end{array}$$

These glasses were ordered for distance, and the sphere reduced by -1.5 each eye for reading.

It is nearly a year since these glasses were ordered, and he tells me that they suit him splendidly, and that he will now be able to complete his twenty years' service. The glasses were paid for by the regiment.

AN UNUSUAL TYPE OF TETANY (?).

By CAPTAIN K. H. REED.

Royal Army Medical Corps.

WHILE officiating as Civil Surgeon at Saugar, India, the following somewhat interesting case was brought to me at the main dispensary :—

The patient, a Gond boy, aged 3 to 4 years, "had been ailing for about two months, would not take his food properly, and had been getting progressively thinner; for about a month he had maintained the position described below."

On going into the verandah to see the child I found it in a crouching position on its hands and knees, the head bent backwards and marked backward flexion of the spine: in fact, a condition of opisthotonos. The

arms were nearly straight, but the thighs and knees were acutely flexed and rigid. On turning the child over on its side the limbs maintained their relative position and the opisthotonos persisted, as it also did when the patient was lifted off the ground.

The peculiar deformity was found to be due to a marked spastic condition of nearly all the muscles of the body, the following groups being principally affected: (a) The muscles of the jaw (the mouth could, however, be opened for about an inch without difficulty); (b) the extensors of the neck and back; (c) the flexors of thigh (iliacus and psoas); (d) the hamstrings; (e) muscles of calf and sole of foot. The arm muscles were affected in a slight degree, as were those of the chest and abdomen. There was no characteristic deformity of the hands, but they were somewhat "claw-shaped" from contraction of the arm muscles. All the deep reflexes were exaggerated, particularly the knee jerks; ankle clonus was



not obtained. Unfortunately no electric apparatus was available for testing the muscular reactions; from the subsequent history, however, I am inclined to think that they were normal. Sensation was unaffected.

The patient was weak and emaciated, there was no temperature, respiration was unembarrassed, and the pulse was somewhat feeble. There was no pain or distress of any kind, the child making feeble attempts to "play." The internal organs were normal, with the exception of the spleen, which was somewhat enlarged. There was no sign of rickets. Mentally the child was rather deficient; it could hardly talk, and the parents stated that it had always been rather "backward." There were no signs of syphilis, and no enlargement of the thyroid gland or of the thymus, as far as could be made out.

The child was taken into hospital, much against its parents' wishes, who evidently expected some sort of miracle to be performed on the spot, and placed on a nourishing diet, with small doses of thyroid extract. At the end of a week the spasm had very much diminished and the patient had gained 4 lbs. in weight when it was taken away by its parents. I

have made several attempts to trace this case since but have been unable to do so.

I am very diffident about the diagnosis heading these notes, but the symptoms described are mentioned in Taylor's "Medicine" as being occasionally found in this disease, and the causative factor in this case seems to have been mal-nutrition, due to neglect, as evinced by the marked improvement following a generous diet. Whether the thyroid extract influenced the result or not I am unable to say.

Perhaps some officer who is a specialist on pædiatrics may be able to throw some light on the subject.

NOTES ON TWO CASES OF BILHARZIA HÆMATOBIA, AT THAYETMYO, BURMA.

BY CAPTAIN W. S. CROSTHWAIT.
Royal Army Medical Corps.

THE following notes, in addition to those already published, may be of interest :—

CASE 1.—*Previous History.*—Private B., 1st Essex Regiment, states that he served in South Africa from November 11th, 1899, to August 15th, 1902. He used to bathe frequently. He noticed that he passed blood at the end of micturition when on manœuvres at Bangalore in January, 1906. The cause of the symptoms was not suspected then, and he did not go into hospital.

Present Condition, and Condition since Admission (April 25th, 1907).—He complained of frequent micturition, and a slight pain at the end of the act; he also noticed blood in the last few drops. On examining the latter it was found to be of a bright red colour, reaction alkaline, and sp. g. 1020. On microscopic examination a large number of red blood corpuscles, pus cells, bladder epithelium and triple phosphatic crystals in their various characteristic shapes were present. No ova or egg cases could be found on this occasion. Although the urine was examined daily for some time, nothing showing the existence of the parasite could be found until May 14th, 1907, when, after diluting it and centrifugalising it, the egg case of an ovum was discovered.

Treatment.—Low diet, barley water, urotropine, 10 grains three times a day, irrigation of bladder with boric lotion daily. Under the above treatment the frequency of micturition has diminished, urine has become acid, and triple phosphates have disappeared, but a fair number of blood corpuscles are still to be seen under the microscope.

CASE 2.—Private R. left South Africa on August 15th, 1902 (with Case 1), and says he bathed once or twice there. He never had any bladder trouble until a few days before he came sick here (May 10th, 1907), when he noticed that he passed blood at the end of micturition.

Present Condition, and Condition since Admission.—Last few drops of urine contained practically nothing but pure blood; sp. g. 1020, reaction acid. Under the microscope the fields were crammed with red and white blood corpuscles, and a characteristic ovum with a terminal spine was found. The ovum was never motile and had evidently not escaped from its shell. The urine was not diluted on this occasion, and it had been recently voided.

Treatment.—The treatment adopted was the same as in Case 1. No ova or their cases have been found since, and the bladder symptoms have improved, although a fair number of corpuscles are still to be seen under the microscope.

Remarks.—Case 2 seems worth reporting owing to the length of time which elapsed between the date of probable infection and the date when the patient first complained of the symptoms of the disease. It was just five years, or longer, and in Case 1 nearly four years, or possibly longer, as he went to South Africa in 1899 and left in 1902, and he may have become infected any time between these dates. Case 2 did not go to South Africa until 1901, and both patients left on the same date, lived in the same bungalow here, and were admitted to hospital within a few days of each other. As regards treatment, I hope to try methylene blue, in addition to that already adopted, when I am able to procure it. Liquid extract of male fern is recommended, but I fail to see how it could be of any use except in those cases when ova are being expelled per rectum.

NOTES ON A CASE OF MASTOID ABSCESS.

By CAPTAIN J. H. DOUGLASS.

Royal Army Medical Corps.

PRIVATE H., 14th Hussars, was admitted to hospital on April 2nd, 1907, with "bronchitis." Morning temperature 101° F., evening 102° F. His temperature gradually fell and was normal on April 14th, but rose again on April 18th, when he began to have a discharge from his left ear, and later great pain. The patient stated that he had never had any trouble with his left ear, although his right ear had given him some trouble before. On April 24th the pain behind his left ear became so bad that he attempted to commit suicide, but was prevented just in time and sent to the prisoners' ward for safety, where he was kept under the influence of morphia.

The diagnosis of mastoid abscess having been made, the patient was taken to the theatre on April 24th, and operated on. A large semilunar flap was dissected from behind the ear and forwards. The supra-meatal triangle was then perforated with the gimlet and enlarged with the gouge, but no pus was found. The bone at the most dependent part of the

mastoid process was now gouged away, and a cavity containing newly-formed pus found. As the abscess was on a level or even lower than the external meatus, the abscess was drained through a hole in the posterior flap.

The interesting point about the case was that I had to operate with improvised tools which I purchased in the local bazaar, viz., a gimlet, and a carpenter's gouge and mallet.

The discharge from the ear ceased as soon as the mastoid was opened, showing, I think, that the disease is often primarily in the mastoid cells and not the attic.

The case did very well and was transferred to Wellington for change of air on May 17th, 1907, completely cured.

Echoes from the Past.

REMARKS ON CERTAIN POINTS CONNECTED WITH THE FIELD HOSPITALS DURING THE AUTUMN MANŒUVRES OF 1872, WITH SUGGESTIONS FOR THE IMPROVEMENT OF THE FIELD HOSPITAL SERVICE.

BY SURGEON-MAJOR G. A. HUTTON.

The Prince Consort's Own Rifle Brigade. (Now retired Medical Department.)

SINCE the termination of the recent manœuvres many able articles have appeared in the *Times* and other daily journals, and also in the monthly magazines, on almost every arm and department of the Army—cavalry, artillery, infantry, control, have all been well represented. The Medical Department has been scarcely alluded to, and as timely preparation is as necessary for this as for any other department, it behoves all medical officers to be on the alert, so that they may not be behindhand when the moment for action arrives.

There is no doubt that in all Army administrative changes the greatest care must be taken that the non-combatant departments thoroughly harmonise with the combatant—it must never be forgotten that the non-combatant exists only for the combatant—that all medical duties and regulations must have for their primary object the keeping of the fighting element in the highest state of health and physical efficiency; that, whatever may be the rank of the medical officer, whether a Surgeon of a regiment or an

Inspector-General of Hospitals, he must act in entire harmony with the military authorities, and with the utmost respect for discipline. I hope, therefore, that nothing I may hereafter advance may be thought as in any way calculated to render the medical officer independent of control, but, on the contrary, whilst advocating a system that would enable field hospital surgeons to take their hospitals at any moment to any reasonable position without reference to any other department of the Army, this is only to be done under proper military authority.

In an article on "Battle-field Surgery," by Surgeon-Major T. G. Fitzgerald, F.R.C.S., in the Annual Report for 1870 of the Army Medical Department, published in June, the following remarks are made in alluding to the experience of the Franco-German War of 1870-71: "There is no doubt that if any amputation of a limb be necessary the earlier the operation is performed the better for the patient's prospect of ultimate recovery. If a careful examination can be made by a skilful surgeon directly after the receipt of the injury, the surgical course to be adopted should be decided upon, and amputation, if necessary, should be done on the spot, without delay." In another paragraph of the same paper Mr. Fitzgerald says that "if at any future time the practice of military surgery in the field is to become even moderately satisfactory, and officers or men injured in battle are to have a fair chance of surviving their wounds, the change will probably be effected by the adoption of more complete, perfect, and detailed arrangements for the surgical examination of the injured, and the performance of all necessary surgical operations on the battle-field within a few hours of the receipt of the injury. The experience of this, and of previous wars, has proved the necessity of not delaying an operation, even of the most serious magnitude, until the patient can be accommodated in an established hospital, however near to the scene of action. To delay the examination for some days very seriously affects the patient's prospects of surviving, and to undertake an important operation after the second day—from the third to the fifth—is often to consign the patient to the grave."

These rules of primary amputation and the surgical examination of injuries—well known to all practical surgeons—were forcibly impressed upon me in the years 1849, 1850 and 1851, when I was a pupil with Mr. Heath, the eminent surgeon at Newcastle-upon-Tyne. As his clinical clerk and dresser for upwards of two years at the large hospital of the town, and with also an extensive

hospital practice amongst the numerous coal-mines of the district, cases were frequently coming before me where nothing but prompt and early surgical action saved the patient. In two cases also of late years in Army practice the success of very early surgical operation has been well exemplified. In one, where I amputated an arm in the upper third of the humerus, at Fort George, in Scotland, for a bad gunshot wound, which had shattered the shaft of the bone extensively, and had involved the elbow-joint and upper parts of the bones of the forearm, the operation was done within one hour after the accident. The second case was a gunshot wound involving the shaft of the humerus, and penetrating into the shoulder-joint, and occurred in the practice of Dr. Hudson, Surgeon of the 47th Regiment, at Barbados, West Indies. Amputation at the shoulder-joint was performed within two hours after the injury. Both these cases made rapid recoveries.

These observations, then, of Mr. Fitzgerald are valuable at the present time, when the attention of the Army Medical Department is being particularly directed to the organisation of field hospitals in connection with the autumn manœuvres.

I hope to be able to indicate, by reference to past history, recorded facts during the recent Franco-German War, and the experience of our own peace manœuvres, how the field medical service with a little trouble and expense may be improved.

It is very necessary that the details of organisation connected with the medical department in the field should now be fully investigated and discussed, that is, if the autumn manœuvres are to be of any real utility in improving the field hospital service. The *Army and Navy Gazette* of September 14th made the following remarks : "The health of the troops throughout the manœuvres has been excellent. But still the errors in our Army medical system are great, and little or no willingness has been shown to ameliorate them. The number and arrangement of the ambulances on the march have been most faulty, and many a man who required but half an hour's rest has been sent to the ambulance for the rest of the day owing to none being attached to the regiment. The assistant surgeons cannot follow them to the rear of the brigade, where the ambulance travels, or tarry long with a patient at the risk of losing his regiment. No attempt, either, has been made to test the working of the Army Hospital Corps, or of training the non-combatants (musicians) to carrying the wounded from the field. Moreover, there has been great insufficiency of divisional hospital accommodation, and many men who, from one cause or

another, should have been therein cared for, have been returned to their regiments on that account, filled the regimental hospital tent, and choked the ambulances before starting." Now, from my experience, at least as far as the medical service in the Northern Army was concerned, there was ample divisional hospital accommodation. The regimental hospital tents were seldom filled, nor the ambulances choked before starting. Every effort was made, as far as circumstances would permit, by the field hospital surgeons to instruct the Army Hospital Corps in their duties. I had frequent parades of the men of the 1st Field Hospital, and exercised them in pitching and striking hospital tents. The Instructor and Adjutant of the Corps were also sent specially from Netley to overlook them. Still, however, there were several imperfections, and to point out these, and to suggest measures whereby they may be obviated or modified on future occasions, is my present object.

The first essential in a field hospital during peace time and for autumn manœuvres is, that it should be on such a scale in everything as to be capable of easy and ready expansion in time of war. It should be so equipped, both in *personnel* and *materiel*, as to enable the medical officer in charge to move it at any moment, and to any reasonable position, on being directed to do so, without reference to any other department in the Army for assistance to effect this; in short, it ought to be complete in itself in every particular. During the recent manœuvres difficulties sometimes took place from faulty organisation that would have prevented this rule from being carried out, more especially on active service, when every department is fully occupied, and when the medical officer in charge of a field hospital should be able to act for himself, irrespective of any extraneous aid.

In a review of the German official account of the Franco-German War, in the *Times* of October 22nd, the evil effects of over-centralisation in the French Army are forcibly shown: "You did well to apply to Paris; renew your request, Paris, Paris, Paris! always Paris had to be applied to. All this wretched confusion occurred not because there were no stores, but because the War Office at Paris had kept all the administration of them in its own hands, and had never understood the vastness of the task of mobilising a great army. Let no smile pass over the face of an Englishman when he reads von Moltke's account. We, the practical nation, *par excellence*, are in no better case at this moment. We have the same evil system of centralisation, the same blind confidence in

what we could do on the spur of the moment, and the case of France in 1870 would be ours, if we were called suddenly to mobilise all our available troops to resist invasion. The difficulty has nothing to do with conscription or general service; these give men, but not organisation. The French have conscription and a talent for administration. The real truth lies in this—that an army is never tried except in war. If the officials charged with its organisation and administration are not students of war, if the Army is regarded as a peace weapon or a political plaything, it will never be fully prepared for that supreme moment when only it is of any real use.” So during the recent manœuvres the rations for the sick in the field hospitals were, by an order from the War Office, directed to be supplied from the regiments to which the sick men belonged, and were to be included in the regimental field ration return. Now, as the field hospitals were common to the whole division which was scattered sometimes over some miles of country, men were often sick whose corps were miles away. How, under such circumstances, could their rations be supplied by their regiments? But when representations were made the answer was, that the rule could be altered by a special order of the Secretary of State for War in London. One man of the Royal Horse Artillery was for four days in a field hospital without any rations being sent by his battery. He was fed on extras, and from the private table of the medical officer in charge. It was not until the sixth day after the force had taken the field that this order about rations was cancelled and the hospital steward allowed to draw the food for the sick on the spot, the sick men being struck off the regimental return for the time being. Again, an infantry brigade was suddenly sent on duty about 7 o'clock at night. The field hospital could not be moved for hours after the brigade had marched, as horses had not been sent for the waggons and ambulances by the Control Department. What was the result? The field hospital surgeon could not find the brigade until the middle of the following day. The horses for the waggons and ambulances of the field hospitals, instead of being taken away for a considerable distance at the end of a march, as they were during these manœuvres, should invariably remain with the hospitals, in the same way as the regimental transport horses. These defects in organisation were embarrassing even in peace manœuvres, but in time of war they would have been grave and would inevitably have led not only to confusion and disorder, but for an utter breakdown in the whole field hospital system. Again, a few days after marching from Aldershot, the two leading horses

of the hospital store waggons were taken away and every effort to have them sent back was unavailing. Now, one of the questions issued from the War Office to officers of the Control Department, to be answered after the manœuvres, referred to the necessity of four horses in the store waggons, an opinion prevailing that for economical purposes two might be sufficient; and it may be true that if roads and weather could always be depended upon and the horses of sufficient strength, this reduced number might suffice; but these conditions can never be certain, even in peace manœuvres, much less, then, in real warfare; roads and weather are liable to be bad, and it is no use unless the field hospital can be taken to the locality where military operations are going on. There is a passage in Macaulay's "*History of England*," vol. i., chap. iii., p. 376, very applicable to this question, even in the present nineteenth century. Describing the badness of the roads and modes of conveyance in the seventeenth century, he says: "The rich commonly travelled in their own carriages with at least four horses. Cotton, the facetious poet, attempted to go from London to the Peak with a single pair, but found at St. Albans that the journey would be insupportably tedious, and altered his plan. A coach and six is, in our time, never seen, except as part of some pageant. The frequent mention, therefore, of such equipages in old books is likely to mislead us. We attribute to magnificence what was really the effect of a very disagreeable necessity. People in the time of Charles II. travelled with six horses, because with a smaller number there was great chance of sticking fast in the mire. Nor were even six horses always sufficient. Vanburgh, in the succeeding generation, described, with great humour, the way in which a country gentleman, newly chosen a Member of Parliament, went up to London. On that occasion all the exertions of six beasts, two of which had to be taken from the plough, could not save the family coach from being embedded in a quagmire." Difficulties such as Macaulay mentions as of frequent occurrence in the seventeenth century, sometimes took place during the recent manœuvres, from the two leading horses being taken away from the store waggons. On one occasion, when the weather was very wet and the roads bad, a considerable time elapsed before the waggons could be got on to the camping ground—a stubble field—and then only by extra assistance. This question, then, of horsing the waggons requires to be dealt with with caution and discrimination, and it is only by considering all the varying circumstances attendant upon many contingencies that must ever be taking place, even in peace manœuvres in England,

where the roads are, for the most part, good, that a satisfactory decision can be arrived at. For my part, I am quite convinced that four horses are absolutely necessary for successful movement.

But now let me turn to some other practical suggestions for future autumn manœuvres. Earnest labour on the work of preparation during the next few months should make our field hospitals much more perfect than they are at present ; and here I am reminded of some remarks made by a distinguished French General, in taking over recently an important command: "After the rude trials we have gone through it were needless to remind you that on the field of battle enthusiasm cannot supply the place of *preparation, i.e., of accumulated labour.*"

The equipment for the *advanced* field hospitals should be as light as is compatible with efficiency, and this can be improved, to some extent, by dispensing with the hospital marquee and substituting the ridge-pole tent. There is no doubt, as Dr. Lawson, the Inspector-General of Hospitals, truly remarks, that the hospital marquee is a particularly roomy, comfortable tent, but for an *advanced* field hospital it is very heavy, requires considerable extra labour to pitch it, and much time is taken up in doing it. Then when it gets wet it becomes much heavier, and the labour in striking and packing it much increased. Now, these disadvantages do not exist with the ridge-pole tent. It is light, easily put up and taken down, requires no extra labour—six hospital servants are quite sufficient for this purpose—and it is easily and quickly packed. All these qualities are great advantages where quick movements are required. The hospital marquee should be reserved for dépôt hospitals, such as were instituted during the recent manœuvres at Pewsey and Amesbury. In such positions the marquee is invaluable. Another improvement would be, that the equipment in one waggon should be complete in itself ; that is, it should be the exact counterpart of the equipment in the second waggon of an *advanced* field hospital, at least as far as is consistent with efficiency and economy. By this plan, if a portion of a field hospital requires to be detached on a sudden emergency on field service, the movement may be carried out with as little delay as possible, no rearrangement or redistribution of the equipment being necessary. The various articles of equipment should also be painted in distinct letters on the store waggon.

Attention to these little matters of detail are of considerable assistance to efficiency and to the medical officer who may be called upon, at short notice, to assume charge of a field hospital, perhaps

in the absence, on leave or sickness, of another medical officer. They are attended with little or no expense. The order for me to assume medical charge of the 1st Field Hospital, Northern Army, during the recent manœuvres, was issued as an after order on the Saturday night. The Sunday intervened, when little or nothing could be done at Aldershot, and we marched early on the Monday morning, so I speak from practical experience in these details of arrangement. I was also medical officer deputed to make arrangements at a "moment's notice" for a supplementary field hospital from the equipment of the 1st Field Hospital, 4th Division, for the cavalry brigade, to accompany it during its forced midnight marches from Upavon, to take possession of the fords on the River Wyley.

The proposed distribution would make a difference in the weight of tentage to the extent of 520 pounds, and this leaves a good margin for the little additional extra articles, such as picketing implements, &c., &c., for the horses and men of the Army Service Corps, recommended to be permanently quartered during the manœuvres with the field hospital, in the same way as with the regimental transport, and also for any duplicates of smaller equipment necessary to equalise the stores in the two waggons and enable them to be used independently on any emergency. Even the General commanding the brigade to which I was attached during the manœuvres had his men and horses of the Army Service Corps for his single waggon and water-cart permanently attached; they were never removed to a distance, as were the men and horses for the field hospital, and I repeat there ought to be no difficulty in the arrangement I have proposed, and which I strongly recommend to be adopted on future occasions.

To turn now to other suggestions that I think would do much to render more complete our field hospital system, and improve the discipline of all Army hospital servants, I trust in any observations I may here make that it may not be thought for one moment I am seeking to detract from the value of the scientific training given at the great central establishment at Netley. No one can value that training more than I do. For the professors of that institution I have the highest respect, both for their eminent professional qualities and the personal interest they have always taken in the welfare of the Army Medical Service. Field hospital equipment, then, in certain proportions, should be kept at all our camps and large military stations, and all medical officers and men of the Army Hospital Corps, both medical and control branches,

as well as all non-commissioned officers and men attached to regimental hospitals, should be regularly exercised in the use of every particular regarding them. In the same way commanding officers exercise their battalions, and generals their brigades, and firemasters their firemen, so the medical officers and hospital servants should be regularly trained in the use of field hospitals, full reports on this training being made to the Director-General at every half-yearly inspection. As a commencement, field hospitals on this plan might be adopted in the following proportions, or in proportions hereafter to be determined, at the following stations: Woolwich, 1; Aldershot, 2; Colchester, 1; Shorncliffe, 1; Dover, 1; Plymouth, 1; Portsmouth, 1; Curragh, 1.

Professor Longmore, in his elaborate treatise on ambulances, chap. i., p. 18, alludes to the subject of hospitals as follows: "It is an admitted fact that the hospital establishments maintained in time of peace, whether as regards the *personnel* or the *materiel* of these hospitals, even though furnished on a liberal scale, must be always inadequate to meet the necessities in time of war. If the establishment be very small, the system of arrangement must be one which admits of expansion in any given section without inconvenience to the general working of the whole. Then, on the breaking out of war, additions will be made in each section wherever required, according to necessity. Each increase will be intimately blended with the previously existing nucleus, and the same machinery will continue in operation, only on a larger scale. But, presuming that the additions when required can be obtained, the doubt remains whether there will be then time and opportunity for that training which is absolutely necessary for men who will have to discharge the delicate and responsible duties of carrying wounded and of hospital attendance upon the sick"; and then the Professor goes on to say, "this is an anxious question," and no doubt from a medical point of view it is, but then the whole system of recruiting in all branches of the Service in England is an anxious question. In the whole range of Army questions none is so important, none so anxious.

It appears to me that the plan I have just very imperfectly sketched for establishing field hospitals in small proportion at our principal stations would contribute in some measure to train all our hospital servants, both control, medical, and regimental, in duties relating to active field service, whereas at present only a portion are so trained at the great central hospital at Netley. Besides, it would familiarise the medical officers and men with field

hospital duties, and make, what is now to some extent a mere form—that is, when medical officers accompany battalions and brigades on field days at our large stations—into a regular and constant practical exercise—in short, profitable preparation for time of war. This plan would also contribute in some measure to neutralise the prejudicial effect of centralisation, each camp and large station having always ready a certain proportion of field hospital equipment for any local use and emergency. The field hospitals would also be always intact and ready to be concentrated for the special circumstances of the autumn manœuvres. It would not be in any way expensive, as horses need not be kept for the duty, the Army Service Corps finding these for drill purposes in garrison at ordinary times, special horses only being required during the actual manœuvres. Moreover, much has been said about want of proper discipline, good order and cleanliness in the men of the Army Hospital Corps during the recent manœuvres. I venture to assert that by the adoption of this system of district field hospitals and regular drills with troops during the season, much good will be effected towards improving discipline and instructing all hospital servants on the “delicate and responsible duties” of field hospitals. It appears to me that some more general system of instruction for the Army Hospital Corps is required than is now or can be given at the central school at Netley, valuable and useful as no doubt the scientific training at that institution is.

The establishment of these field hospitals at all our camps and large stations would also be most useful in another way. The most eminent Army medical authorities are thoroughly convinced that the treatment of certain diseases in tents is the most sure plan of success. The Prussians have now employed tents every summer for similar circumstances, and report that “upon the whole, the treatment under the tents shows that the majority of patients can be more rapidly and surely cured through the influence of an abundant volume of air. Tents have been found absolutely indispensable in larger hospitals, during summer-time, in cases where some of the rooms had to be evacuated, in order to have them thoroughly ventilated and disinfected, and also when the temporary additional accommodation for the patients was required. This important advantage, which may be derived from tents as places of evacuation, cannot be too highly estimated.”

Reviews.

THE TWENTY-FOURTH ANNUAL REPORT OF THE ST. ANDREW'S AMBULANCE ASSOCIATION (June 1st, 1906, to May 31st, 1907). Head Office: 176, West Regent Street, Glasgow.

The last Annual Report of the St. Andrew's Ambulance Association, which became an incorporated Society in 1899, with the object, amongst other things, of promoting instruction in and carrying out works for the relief of suffering in peace and war, fully justifies the claims of the Association to represent a national Red Cross Society in Scotland.

From an Army medical point of view, the most interesting part of the report is that which deals with the St. Andrew's Ambulance Corps. Twenty-five new sections of the Corps were formed during the year, making in all 132 sections. It is stated that the work of the organisation is being carried on with great enthusiasm by the members, and that the majority of the sections are now well equipped and of a high standard of efficiency. The numbers enrolled in each section vary considerably, but with the exception of the G. and S.W. Railway Brigade are under one hundred and average probably about thirty. The total membership, however, is about 2,500, and if this number of more or less trained ambulance men is available as a supplement to the Army Medical Services in time of war, the St. Andrew's Ambulance Association is indeed doing good and useful work in Scotland. Many of the members are apparently railway employees, and, however useful and necessary their training may be for relief of suffering during accidents in time of peace, they are not likely to be spared from their railway duties in time of war. The men to enrol and train for hospital and ambulance purposes in time of war should be men whose conditions of life permit them to be free when war breaks out, and who are not already enrolled as combatant volunteers. There is reason to fear that this point is not sufficiently considered in this country in connection with the aid that a Red Cross Society is able to give in this direction, and in connection with the training and enrolling members in peace time for ambulance purposes in war. The great continental Red Cross organisations go very carefully into these matters, and their example might be followed here with advantage. We feel sure, however, that the able officers who direct the St. Andrew's Ambulance Corps are taking up the question of supplementary aid in war in a serious and practical manner, and we make the suggestion regarding the class of men they are training merely with a view to adding to their efficiency. Railway and factory employees and policemen are undoubtedly the most suitable class of men to instruct in ambulance work for accidents in time of peace; but can we depend on their being available for this work in time of war? We think not; and we would like to see "war sections" formed and instructed, composed entirely of men who will be available.

W. G. M.

SOME SUCCESSFUL PRESCRIPTIONS. By A. Herbert Hart, M.D. London: John Bale, Sons and Danielsson, Ltd. Price 1s. net.

Dr. Hart's pamphlet gives some twenty prescriptions for the commoner diseases, which the author trusts will prove useful to many of his fellow-practitioners in the Noble Art of Medicine.

MINOR MEDICINE. A Treatise on the Nature and Treatment of Common Ailments. By Dr. Walter Essex Wynter. London: Sydney Appleton, 1907. Price 6s. net.

"For who hath despised the day of small things?"—*Zechariah* iv., 10.

This is a book of 275 pp., devoted to the description and treatment of such common complaints as "a Bilious Attack, *Pyorrhœa Alveolaris*, Toothache, Baldness, the Harvest Bug, Chilblains," and suchlike subjects in the sphere of minor medicine. It may be recommended as giving a thoroughly practical description of these ailments and their treatment.

Current Literature.

The Value of Sugar in the Ration of the Infantry Soldier during Manœuvres.—M. Joly, the officer in medical charge of the 94th Infantry Regiment, stationed at Bar-le-Duc, in France, has contributed an interesting and valuable article to the *Archives de Médecine et de Pharmacie Militaires* of April last, on results obtained during the autumn manœuvres of 1906, in experimenting with sugar as an addition to the manœuvre ration, and as a substitute for a portion of the meat ration.

The experiments were suggested by the now recognised principles of alimentation, to the effect that albuminoids are required for the repair and growth of tissue, carbohydrates for the production of muscular work, and fats for the production of heat.

During manœuvres an increase of carbohydrates and fats, rather than of proteids, is required, and the question arises whether it would not be wise to make the emergency ration entirely a carbohydrate ration and replace all the meat in it by sugar or a sugar food. The dynamic properties of such a food being superior to those of meat, a carbohydrate ration could rightly claim the name of a fighting ration or *vivre de combat*. The experiments were carried out to determine the following points:—

(1) Whether a number of men, taken together without any special selection, could assimilate, without harm, daily doses of sugar, amounting to 60 and 165 grammes, during a period of twenty days, under the conditions of muscular work required during infantry manœuvres:

(2) In what proportion can the meat ration be replaced by sugar, without objection on the part of the men:

(3) Whether such substitution increases or diminishes the physical resistance of the men and their susceptibility to disease:

(4) Whether it has any effect on the incidence of special injuries, such as heat-stroke and over-fatigue:

(5) Whether the whole of the meat ration could be replaced for two or three days by 300 grammes of sugar without diminishing in any way a man's vigour and energy.

For the purpose of the experiment two companies, No. 1 and No. 6, of the 94th Regiment, were selected, with a strength of 142 and 149 men respectively. Every precaution was taken to prevent the men themselves, or the other ten companies of the regiment, knowing that an experiment was being made, in order to avoid emulation or interference with the results.

The 1st Company left barracks on August 27th and returned on

September 15th. The 6th Company left on August 30th, and also returned on September 15th.

The 1st Company had 50 grammes of sugar added to the normal manœuvre ration during the period August 27th to September 2nd inclusive, while during a second period, from September 3rd to 15th, 80 grammes of the meat ration were replaced by 100 grammes of sugar. The average daily ration of the company, taken from the messing books, was as follows:—

Bread	..	..	..	..	850 grammes.	
Fresh meat	..	..	..	..	400	„ (first period).
„	..	..	..	..	320	„ (second period).
Lard	..	..	..	..	21	„
Potatoes	..	..	..	..	480	„
Sugar	..	..	..	..	64	„ (first period).
„	..	..	..	..	113	„ (second period).
Coffee	..	..	..	..	25	„
Wine	..	..	..	..	30 centilitres.	

The value of this ration is 3,587 calories for the first and 3,684 for the second period, the former period giving 3,087 and the latter 3,270 from carbohydrates and fats alone.

The 6th Company had a variation of rations during five periods:—

(1) From the evening of August 29th and during the 30th and 31st, 60 grammes of sugar were added to the manœuvre ration.

(2) On September 1st, 2nd, 3rd and 4th, 80 grammes of sugar were given instead of 50 grammes of fresh meat.

(3) On September 5th, 6th, 7th, 8th, 9th and 10th, 120 grammes of sugar were given for 100 grammes of fresh meat.

(4) On September 11th and 12th, 80 grammes were given as in the second period, for 50 grammes of fresh meat; and

(5) On September 13th, 14th and 15th, five volunteers had the whole of the meat ration replaced by 300 grammes of sugar, the remainder of the company getting 40 grammes of sugar, in addition to the regular sugar ration of 45 grammes.

The average daily ration of the company was therefore as follows:—

Bread	..	..	..	850 grammes.
Fresh meat	..	..	..	450, 400, 350, 400 or 450 grammes, according to period.
Fresh vegetables	..	..	..	900 grammes.
Lard	..	..	..	30 „
Sugar	..	..	..	45 + 60, 45 + 80, 45 + 120, 45 + 80, 45 + 40 (or 300) grammes, according to period.
Wine	..	..	..	25 centilitres.
Coffee	..	..	..	30 grammes.

The value of these rations is estimated to be 4,594, 4,624, 4,755, 4,624 5,005 calories for the several periods, of which 4,041, 4,100, 4,255, 4,100 and 4,706 calories are derived from carbohydrates and fats.

Comparing the alimentation of these two companies with that of the other companies of the regiment, M. Joly gives the following figures, and illustrates the differences by means of graphic charts.

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	No. 11	No. 12
Total calories..	3,684	3,751	4,096	4,083	4,398	4,755	4,291	3,805	3,734	3,654	3,568	3,813
Calories from carbohydrates and fats	3,270	3,227	3,573	3,550	3,865	4,255	3,758	3,272	3,211	3,121	3,044	3,290

The calories obtained from sugar alone varied from 82 in No. 12 Company to 676 in No. 6 Company; from all carbohydrates they varied from 2,650 in No. 11 Company to 3,452 in No. 6 Company; and from fats they varied from 347 in No. 9 Company to 856 in No. 5 Company.

The extra sugar given to the 1st and 6th Companies was issued in lumps and taken with morning coffee, in water, or coffee carried in the water-bottle, in coffee at the mid-day halt (*grand'halte*), and in the evening coffee. In some cases it was taken with wine, in the form of a hot punch. Several lumps were also given to the men to eat as they pleased. The men were recommended to reserve the water and sugar in the water-bottles to the second stage of the day's marching, when they were beginning to feel fatigued. It is noted that the men seldom took the sugar by itself, but got to like it very much with coffee, or in the form of sugar water, and were, on the whole, extremely pleased with this sugar addition to, or change in, their ration. Their officers are stated to have been delighted, too, with the endurance, good spirits and general alertness of the men under this ration.

Observations were made to determine whether there was interference with the hepatic function from the absorption of too much sugar and whether thirst was increased, but in no case was either condition noted. In fact, the use of sugar seemed to diminish thirst.

The condition of the pulse and respiration was determined in the case of a few men and the body weight in all. The pulse of eight men having the special sugar ration was 76, 75, 76, 72, 71, 74, 75, and 75 at the commencement of the march, 92, 82, 79, 76, 78, 81, 80, and 81 at the first halt, and 97, 92, 85, 80, 81, 81, 82 and 83 at the mid-day halt. The average pulse-rate of ten men of the 12th Company, when the sugar ration was very small, was 86 at the first halt and 93 at the mid-day halt. Respiration became slightly more rapid in three of the eight men taking special sugar ration who were examined, and varied at the mid-day halt from 14 to 17, in one case only it was 21, while the ten men tested in the 12th Company gave an average of 19 at the mid-day halt. As regards weight, the average weight of Nos. 3, 6, and 7 Companies increased during the manœuvres by 0.8, 0.2 and 0.1 kilogramme respectively; that of the other companies diminished by 0.1 kilogramme in the case of No. 1 Company to 1.5 kilogrammes in No. 9, and 1.2 kilogrammes in Nos. 8 and 12 Companies.

But it is in connection with the sickness among the men during the manœuvres that the most remarkable results are shown. In No. 6 Company, which was taking the greatest amount of sugar, and the ration of which had consequently the highest caloric value, such causes of inefficiency as sun-stroke, over-fatigue, foot soreness, &c., were entirely absent. M. Joly is, however, sufficiently guarded in drawing conclusions, and allows that the influence of the Commanding Officer of the company may have had something to do with its remarkable state of fitness during the seventeen days of the manœuvres. It is, however, noteworthy that in No. 1 Company only two men fell out during the marches, and in No. 6 Company none, while in the other companies of the regiment the numbers varied from four in No. 5 to as many as thirty-three in No. 11 Company. In other words, the company whose ration had the highest number of calories (4,755) gave the least amount of sickness, and the

company with the least number of calories (3,568) in its ration gave the highest amount of sickness. Generally speaking, the sickness was in inverse proportion to the caloric value of the ration. Further, it is noted that the difference in calories was in no way due to difference in the meat ration, which was practically the same for all companies, and that, therefore, any good effects that may be attributable to an increased caloric value of ration were due to fats and carbohydrates, and mainly to sugar.

These experiments are of a practical character and afford valuable data for estimating the requirements of a soldier's ration during manœuvres, which, in the case of the French Army at least, closely approximate to the conditions of active service.

W. G. M.

The Anaerobic Bacteria of Water.—By M. H. Vincent, Médecin-Major de 1^{re} Classe, Professeur à l'Ecole d'application du Val-de-Grâce. In this paper (*Annales de l'Institut Pasteur*, January, 1907), Vincent points out the importance of the estimation of the numbers of anaerobes present in water in order to obtain a knowledge of its potable qualities, seeing that the relative proportion of anaerobes increases with the degree of pollution of water. The most important sources of water pollution are the excreta of sick, or even of healthy, individuals, and secondly, vegetable or animal organic matters in a state of putrefaction. The colon bacillus is the most important, but not the sole, indicator of such pollution. In the intestines of men and animals the conditions are such as to favour the life of anaerobes. The presence of anaerobes in water, however, may indicate not only faecal contamination, but also the presence of dead plants, and the bodies of all sorts of animals and insects.

In examining water for anaerobic bacteria, it is with the strict anaerobes that we should concern ourselves. To separate these from the facultative anaerobes is not an easy matter, but can be carried out by following the methods to be described. Vincent uses a medium composed of:—

Gelatine extra	..	..	..	..	50 to 75 grammes.
Glucose	..	..	..	..	5 "
Glycerine	..	..	..	..	5 "
Peptone beef broth..	..	..	..	..	500 cc.

This medium is neutralised, filled into tubes and sterilised. Immediately before use a sufficient amount of sterilised solution of sulph-indigotate of soda is added to it. For the isolation of anaerobes belonging to the genus *Tyrophix* 15 to 20 per cent. of separated milk, filtered and sterilised, may be added to the above medium. The water to be examined is mixed in varying proportions with the medium, which has been previously boiled and allowed to cool down to a temperature of 30° to 35° C. For pure waters one may sow from .5 cc. to 2 cc. or more of water in each tube of the medium; for contaminated waters from .5 cc. to .1 cc. may be employed. After mixing the water and medium it is drawn up into sterilised pipettes about 50 cm. long and about 3 to 4 mm. in internal diameter. The pipettes are then sealed at the ends and the gelatine set by holding them under a stream of cold water. This method permits the colonies of anaerobes to be easily counted and isolated. The strict anaerobes are nearly all gas-formers, and the colonies nearly all show a diffuse contour. They are nearly all bacilli and a large number of them are spore-bearers.

Vincent's conclusions are as follows : The presence of a large number of anaerobic germs in water is a certain proof of its bad quality. Pure waters, in fact, do not contain more than a very few anaerobes—one or two per cc. or even less. Inferior, unwholesome, or seriously contaminated waters contain a proportion of anaerobes varying from 10, 20, 50 per cc. up to 500, 1,000, 10,000, 15,000, or more. When—as is generally the case—the number of aerobes much surpasses that of anaerobes, one may conclude that the water under analysis is only a passive vehicle for organic matters, which may be harmless or dangerous, specific or indifferent, which have found their way into it, but in whose case fermentation is arrested or limited. When, which more rarely occurs, the microbial formula is inverted, the number of anaerobes exceeding the number of aerobes, this fact indicates the existence of a source of active organic putrefaction in the water, this putrefaction being due to either animal or vegetable matter. It is usually in the water of wells, reservoirs, or cisterns that this inversion of the formula may be found, as the stagnation of organic matter in them favours the multiplication of anaerobes. For example, in a well full of decomposing vegetable matter and dead tadpoles the anaerobes numbered 16,000 and the aerobes 14,000 per cc. In another well in which the anaerobes were innumerable and far exceeded the aerobes, the carcass of a dog was found.

The quantitative and qualitative determination of the obligatory anaerobic microbes contained in a water should, consequently, form an integral part of a thorough bacteriological analysis. Combined with the usual methods of search for, and enumeration of, the saprophytic and pathogenic organisms, and the precise enumeration of *Bacillus coli*, the importance of which has been already demonstrated, this determination always affords a very useful aid in the estimation of the value of potable waters.

J. G. McNAUGHT.

Correspondence.

CARDIAC MURMURS AS A CAUSE OF UNFITNESS FOR SERVICE.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—After reading the interesting article entitled "Note on Cardiac Murmurs as a Cause for Unfitness for Service," by Lieutenant-Colonel (now Colonel) D. Wardrop in the July number of the Journal, I should be obliged if you can spare me a few lines to call attention to some remarks he made, which caused me much surprise.

He states : " Why should a man who otherwise is a useful and zealous soldier be hunted out of the ranks because he occasionally has an epileptic fit? How many men in civil life are thrown out of employment for a similar cause? I venture to say not one."

Now, I am sure 99 per cent. of medical men will side with me and

totally disagree with Colonel Wardrop. We cannot consider a man capable of making an efficient soldier who may at any moment be seized with an epileptic fit, perhaps when on important duty, perhaps on active service, and possibly, subsequent to his fit, being maniacal for a certain period, endangering his fellow soldiers, perhaps at a time when he has a rifle, ammunition, and a bayonet on his person. Would Colonel Wardrop allow an orderly who was an epileptic to look after a seriously ill patient? I should be greatly surprised if his answer was in the affirmative. If not as an orderly, why as a soldier in a regiment?

When at the largest hospital in London I treated many epileptics, whose tales were most harrowing to hear, for, although many were capable and bright, yet they could obtain no permanent work, being discharged immediately they were found in a fit—a sad occurrence, but one in which my sympathies are equally divided between the employer and the employed, for no man can be expected to retain in his service a man who may do serious damage, not only to his effects, but also to his other employees.

Further, some friends of mine most kindly engaged a man as butler, knowing him to be an epileptic, mainly taking him on account of his inability to get work owing to his malady. The result was rather unfortunate, for he had a fit when they had a dinner-party and he broke a large trayful of very valuable Venetian glass, and after this they naturally did not care about keeping on an epileptic servant, though I believe, in this case, the fits were few and far between. Thus, to my personal knowledge, I know that civilians are frequently discharged from service on account of epilepsy.

Again, one can never foretell what may happen in a post-epileptic condition, even though the former fits have passed off in a mild and inoffensive way. I call to mind a navvy I treated for epilepsy some years ago; the history of the disease dated back several years and all the fits had passed off quietly. One day he was working at a main drain in Whitechapel, when he had an epileptic fit; on coming round he seized his pick-axe and began to chase the foreman, chopping violently at him with the pick-axe; this exciting chase lasted for nearly half a mile, nobody daring to interfere, when the navvy suddenly became aware of his position and wondered why he was tearing along with the foreman flying in front of him. He quaintly informed me that "The foreman *was* afraid," and no wonder, considering the navvy stood considerably over six feet and was an enormously powerful man. This was purely a maniacal attack subsequent to the fit, for the man had no grudge whatever against the foreman. Now, what might have happened if this man had been a soldier with rifle and ammunition?

Colonel Wardrop further states: "Once brand him with those three letters 'V.D.H.' and he will never work again, if he does not want to—we have already taught him that." I would also suggest that once let

a man know he has been treated for an epileptic fit, *i.e.*, has been treated as a genuine sick man and not as a malingerer, he will, if necessity arise, use this and "will never work again if he does not want to."

Malingering an epileptic fit is one of the commonest methods employed in attempting to get into hospital—anyhow, in civil life. Branded as a genuine epileptic he can employ a fit at any time to get off unpleasant duties or active service, and I think all will grant that if a man is known to have genuine epileptic fits the difficulty in making a differential diagnosis is multiplied enormously, and one would have great difficulty in pronouncing him a malingerer.

For these reasons I think soldiers who have genuine epileptic attacks (*grand mal*) should be invalided *as soon as possible*, and even those with *petit mal* would be better in civil life.

August, 15th, 1907.

I am, &c.,

L. BOUSFIELD,
Captain, R.A.M.C.

LEPROSY AND AN INDIAN FAKIR.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

Sir,—The following was delivered at my office, and may amuse your readers. Apparently, Western Scientists will have to look to their laurels. I understand the Urdu postscript is the "Professor's" qualifications *plus* his address, &c. He did not favour me with a sample.

Yours faithfully,

Bombay,
August 25th, 1907.

R. H. FORMAN,
Colonel, R.A.M.C.

Bombay august, 1907.

To

The Principal Medical Officer

Town Hall

Bombay Castle

Bombay

RESPECTED SIR

I most humbly and respectfully beg to state that I am a „Fakir,, from Deccan Hyderabad, and have in my possession a „Wonderful,, and Charming Cure for „Leprosy,,. On hundreds Occasions I have personally tried it on misreable Victims of the disease in all stages, and the results achived have been entirely satisfactory. But thinking that this miraculous remedy will find more extensive wide-spread use in your hand than in mine and will be the invaluable means of snatching many hundreds of the misreable sufferers from the fatal jaws of the Baneful cankers.

Under the circumstances I most humbly request you to give it a fair

trial and if found successful, which it surely will, you will kindly recommend its use cause it to be Circulated in all the Hospitals, Public as well as Private, so as to be an efficient and available means of saving suffering humanity.

I beg to remain

Sir

Your most obedient

FAKIR

دعا گو حلقہ محمدی سرزورہ خیر اسکنی جہ راجہ دکن حالوار دنیا نا کبائوہ کبائوہ علم سنا جائزہ فیضیہ سرسرم محمدی
والہ
خواجہ محمد امجد علی دہشتی والہادی

WANTED, AN EXPLANATION.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—I am much obliged to Lieutenant-Colonel Manders, but his explanation, if I may so designate it, really amounts to an entomological sketch, in the main, begging the whole question. I asked for an explanation of a mosquito-free "oasis" in a malarial-infested area, and he replies by quoting Wallace's "Darwinism" *re* the limitation of habitat commonly observed in many insecta "for no apparent cause," illustrating the fact by examples. Presumably there is a cause for the absence of the swallow-tailed butterfly from all parts of England other than Cambridgeshire, just as there is for the absence of mosquitoes from Sarant Wadi; for Nature is never capricious (scientifically speaking) but rigidly law-abiding. The facts are not in dispute, but the cause. One officer kindly wrote to me from Crete suggesting "lemna," but it is not so in Sarant Wadi, and, at the best, it could only be a partial explanation.

It was, perhaps, ambiguity on my part that led Lieutenant-Colonel Manders to imagine that I asserted that fish would not destroy mosquito larvæ. Of course they will, in a given lake or pool (perhaps entirely), but they can't, and never will do so, in an area of five or ten miles square, including within it a large native town, numerous villages, and not one but thousands of breeding places, to which no fish could gain access, and in which, *as a matter of fact*, no fish existed. The "mosquito-brigade" at Colaba the other day, for example, found larvæ in a small collection of water in the fork of a tree. I do not suppose that Lieutenant-Colonel Manders will maintain that, however ubiquitous the Indian minnow may be, it is arboreal. I repeat that there are no mosquitoes at Sarant Wadi anywhere, or at any time, and no larvæ to be found in lake, pond, pool, puddle, rice-field, *water-chatty*, or any permanent

or casual collection of water whatsoever. At least I failed to find them, and, all the year round, no one uses mosquito curtains. I am afraid, therefore, that Lieutenant-Colonel Manders' suggestion must be regarded, in more senses than one, as "fishy."

By the way, I made inquiry about the birds, thinking it possible that they might have something to do with the matter, and elicited the fact that the common sparrow was also conspicuous by its absence. Is there any connection?

Bombay,
September 21st, 1907.

Yours faithfully,
R. H. FORMAN,
Colonel, R.A.M.C.

NOTES ON THE HEALTH OF EUROPEANS AND NATIVES IN PEKING.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—In the very interesting "Notes on the health of Europeans and Natives in Peking," by my predecessor, Captain (now Major) F. E. Gunter, in the *Journal* for February, 1906, page 153, the absence of cases of enteric fever among the French, Russian and Japanese Legation Guards for the year 1903 is specially to be noted. In this connection the following translation of a letter—written in answer to enquiries by me—which I received in January, 1906, from the Senior French Medical Officer, who has been in Peking for many years, may be of interest.

I am, &c.,
K. BRUCE BARNETT,
Major, R.A.M.C.

Peking,
August 1st, 1907.

TRANSLATION.

DEAR DR. BARNETT,—This year there have fortunately been no cases of typhoid fever, either in the French Legation or in the Legation Guard, nor yet in previous years since November 1st, 1901, the date on which the Guard was formed. I am of opinion that this result is due (1) to the fact that only distilled water is used for drinking purposes, the well water of the barracks luckily being full of magnesia, and the soldiers having no inclination to taste it. (2) To the sleeping accommodation of the soldiers, all of whom sleep on the first floor of the barracks. (3) To good feeding. (4) To freedom from crowding in the barracks, the men's rooms being plentifully aired during the day and only occupied at night. (5) To the removal from the barracks every morning of all slops and excrement. (6) To the cleansing of the men's clothes, &c., in a special wash-house by washerwomen who use boiling water and soda. (7) To attention to personal cleanliness, which is scrupulously observed and is compulsory. (8) To the care of the mouth, supervised by a medical inspection, an antiseptic powder for the teeth being distributed to the men.

In this country, where during damp and hot weather the earth emits faecal odours, living on the ground floor is particularly dangerous. The cleaning of the nose and mouth after every march and the use of wine, the tannin of which makes an excellent intestinal antiseptic, have also contributed much to the good health of the men. The nearness of the refectory wash-stands is equally a guarantee.

(Signed) Dr. ONIMUS,

January 10th, 1906.

Médecin-Major, M. O. French Legation.

MALTA FEVER.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

DEAR SIR,—I have been told of an instance of one of our Sisters who, on her way to Egypt, landed at Malta for three hours and had Malta fever by the time she reached Alexandria. If the facts are as stated, they might interest you if you have not already heard of the case. I cannot give you chapter and verse, as I don't know them.

I am, &c.,

Woolwich,

M. P. HOLT,

September 2nd, 1907.

Major, R.A.M.C.

[It would be interesting to have the details of this case.—ED.]

SAVINGS BANK ACCOUNTS—A SUGGESTION.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—May I crave a small space in the Journal to point out to the officers of our Corps how they may help the non-commissioned officers and men to become thrifty and more efficient, and that is by urging them to start a savings bank account (if they have not already done so), keeping the book, and each week persuading them to put some of their pay into the bank?

Instance. A private who was seriously injuring himself with alcohol and nicotine had to his credit in the bank on February 7th, 1907, the sum of 1s., the remains of an account between 1903-5. On February 8th, 1907, he began by putting in 17s., now he has to his credit the sum of £11 19s.

It is very important that the paying officer keep the book and bank the money.

Yours, &c.,

September 21st, 1907.

"CHIRURGEON."

Journal
of the
Royal Army Medical Corps.

Original Communications.

ENTERIC FEVER IN WAR.¹

By MAJOR W. S. HARRISON.
Royal Army Medical Corps.

ALTHOUGH the subject of enteric fever is one which is being constantly brought to your notice in one form or another, it is of such perennial and overwhelming importance to all those concerned with the health of troops, that I feel it would be unnecessary affectation on my part to apologise for again bringing it forward. Each of us looks on the subject from his own particular point of view, whether it be that of clinician, sanitarian, pathologist, or administrator; and I have no doubt that every one of us has had moments of inspiration when its prevention seemed easy if only folks would do some one thing (boil all water, for example) which they do not do now. But when we look into it in our more sober moments, and study the facts as far as we know them, the problem does not look so easy; indeed, I am afraid that the more one examines it the harder the problem appears. In this respect the results of investigation have differed very much from those got with malaria, trypanosomiasis, plague or Malta fever. In each of these diseases research has brought to light one big preponderating feature, and the question of prevention has thereby become enormously simplified. With typhoid fever research has had the very opposite effect. How very simple it looked a few years ago. Typhoid fever

¹ Paper read before the United Services Medical Society, on November 14th, 1907, at the Royal Army Medical College, Millbank, S.W.

was spread because the fæces of typhoid patients got into water and thence into fresh subjects, and all that was necessary to prevent the spread of the disease, was to isolate your patients till they were well, and boil all water and things which water might have contaminated. If you still got enteric fever among your troops, it was evident that you had been slack in one or other of these respects. It looks very much less simple nowadays. Take the origin of the disease first; you will remember how typhoid fever broke out in the Soudan in the 1884-85 campaign, when, to all appearances, the troops had long been away from any likely source of infection, and, so far as was known, had carried no cases of the disease with them. Those who believed firmly in the specific origin of enteric fever could only surmise that possibly there had been a series of mild ambulant cases which had escaped detection, and which, by constant reinforcement of the virus under the conditions of active service, had gradually led to the production of typical cases of the disease. Others, who were not so firmly convinced of the specificity of the typhoid bacillus, fell back on the notion that it was possible for typhoid bacilli to evolve under certain unknown conditions from the ordinary bacterial flora of the intestine, and the discovery of a whole string of organisms intermediate in character between typhoid bacteria and *Bacillus coli* gave a good deal of colour to this view. About the year 1900 our knowledge was extended by the discovery that typhoid bacilli were frequently present in the urine of patients suffering from enteric fever, especially during the later stages of the disease, and, what is of greater importance from our point of view, that the bacilli might remain there for months or even years after convalescence. Horton Smith,¹ in his Goulstonian lectures, gave the percentage of convalescents so infective as about 25 per cent. At first it was thought that the presence of typhoid bacilli in the fæces was a phenomenon usually confined to the earlier days of the illness, but improved technique has shown that this is not the fact; the German Commission² have found that the specific organisms may be recovered from the stools up to the very end of the disease, and even long into convalescence. Moreover, these workers have found that even when the bacteria have apparently disappeared from the stools, they may again be found there at a later date. It is probable that in these cases the typhoid bacilli come from the gall-bladder, which

¹ *Lancet*, March 24th, 1900.

² JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, vol. vi., p. 117.

is very frequently and often very obstinately infected in enteric cases. When the bacilli pass from the bile passages into the bowel, they are sometimes destroyed in the jejunum and upper portions of the ileum; whilst at other times, as a result of some at present unknown change in the condition of the bowel, they survive, and are carried along to be passed with the fæces.

But the presence of typhoid bacilli in the fæces and urine is not confined to people who have suffered from the disease; the German commissioners and others have found the organisms in the stools and urine of people who gave no history of previous attacks of enteric fever, and especially in people who had been in contact with typhoid patients. The gall-bladder and bile passages are very frequently the seat of infection in such cases, just as they are in enterics, and the bacilli seem to be very usual causative factors in the production of cholecystitis and gall-stone. Blumenthal¹ made fourteen examinations of bile removed during operations on the gall-bladder and bile-ducts; in four of these cases the bile was sterile, in four *Bacillus coli* was found in pure culture, from one case paratyphoid B. was recovered, in one case there was an unknown organism, and in four out of the fourteen cases typhoid bacilli were present. He quotes the history of one of these cases, in which there had been an interval of six or seven years between the original attack of typhoid fever and the onset of the biliary symptoms, so that probably during the whole of that time the bile passages were permeable, and typhoid bacilli were trickling into the patient's gut. Etienne² reports a case of an old man who had had two attacks of Eberthian jaundice, although he had never, so far as was known, suffered from typhoid fever. The patient eventually died from angina pectoris, and, *post-mortem*, there was found chronic cholecystitis; the gall-bladder contained gall-stones, and typhoid bacilli were isolated from the bile; in this case again, it is important to note that the bile passages were permeable. Such cases as these cause one to wonder whether, after all, the epidemic jaundice of camps may not also be due to a similar local typhoid infection, for it is a curious and suggestive fact that in many cases where it has been tried, the patient's serum has given an agglutination reaction with typhoid bacteria. Minelli³ examined the dejecta of 250 healthy prisoners; he found typhoid bacilli in the stools of one

¹ *Deutsch. Archiv für Klin. Mediz.*, vol. lxxxviii.

² *C. R. Soc. Biol.*, vol. lxii., p. 745.

³ *Cent. für Bakt.*, I. Origin., vol. xli., p. 406, June 2nd, 1907.

of them who had already been eight weeks in prison, was in good health and said that he had never been ill. But one may find the bacteria in these carriers in other places than the stools and urine; they frequently occur in abscesses, especially of bones. We had a very instructive case of that in this College. An officer of the Royal Army Medical Corps had had typhoid fever a year previously; it had been complicated by the formation of nodes along his sternum and ribs; one of these suppurated and left a sinus, from which we recovered the typhoid bacillus in pure culture. The cases which I have quoted are only examples among many, and the danger to the community from their presence is obvious; for it must not be forgotten that, when a man has such a focus of infection about him, the bacteria are not only passed in his stools and urine or into the dressing of his sinus, but are carried by the movements of the body, the handling of his clothes, &c., to every part of him, so that he may contaminate everything he touches; and if, for example, that happens to be a spoon which is subsequently dipped into milk, you have already the makings of a little epidemic. Sabouraud¹ shows how, when there is a microbic lesion of the skin, the surface of almost the whole body becomes contaminated. He gives, as an example, the case of streptococcic impetigo of the face, where it is easy to recover the causative organisms from the hands, the wrists, and from the skin of the trunk. The case of a typhoid carrier is precisely similar. It does not require a very vivid imagination to realise the possibility of transfer of the bacilli from the meatus urinarius or the region of the anus to the subject's shirt, for example, and thence to his hands and hair—this even in a person so proverbially clean in his habits as the British officer; with people less scrupulous on the subject of cleanliness, or prevented by the conditions of active service from keeping themselves clean, the contamination will, of course, be more pronounced.

The difficulty of preventing the spread of typhoid fever by such carriers is not lessened by the fact that they may be to all appearance quite healthy; and the fact of their infectivity can only be detected by an elaborate and repeated examination of the stools, urine and discharges, which, although possible and desirable in the case of convalescents, cannot be applied to a whole community. There is, however, one little point which may eventually prove useful in this connection; it is that in almost all the cases where

¹ *Bulletin de l'Institut Pasteur*, vol. ii., p. 281.

the matter is mentioned the blood serum of the infected subject showed a high agglutinin value. This was present in the case of the officer which I have just mentioned; and it is suggestive; for the agglutinin value of the serum does not, as a rule, remain at a high level for very long after an ordinary attack of typhoid fever, so it seems possible that a persistent high agglutinin reaction with the patient's serum, may eventually turn out to be presumptive evidence of continued infectivity. So much for the origin of enteric fever, and I think I have said enough to show how very widespread the possible sources of infection are, and how very difficult it is to detect them all. Might I here put in a protest against the too common practice of guessing at the origin of an epidemic. If the evidence which it is possible to accumulate is not sufficient to incriminate a certain source with practical certainty, it is surely far better to have the courage of ignorance and say one does not know, for reports based on insufficient data only lead to the darkening of counsel later on.

As to the spread of enteric fever, here again we have had to depart from the simple explanations of a few years ago. The view that typhoid fever was almost entirely carried by water was one which resulted from a long study of the disease in European countries, and especially in England; for England, at any rate, it seems perfectly sound; and after all, when you come to think of it, typhoid bacilli have precious little chance of doing harm in this country in any other way than by getting into water. Dejecta, in the greater proportion of cases, disappear down a drain as soon as they are passed, and it is only when the drain leaks into a water supply that the bacteria get an opportunity of returning to the human body. I except, of course, the few cases of personal infection which do occur among the more crowded portions of the population. In those parts of England where the water-carriage of sewage does not obtain, the population is as a rule widely spread out, and the chances of epidemic outbursts are much less than they are with troops. There are, however, still a few towns which go in for privy middens, or night-soil tubs, and it is interesting that it is just such towns which show a high incidence of typhoid fever. But compare the conditions in England with those, say, in India, where instead of drains you have (or had until the other day) everywhere a system of conservancy which might have been expressly devised for the propagation of enteric fever; I mean the dry-earth system combined with superficial burying of the dejecta; where, in addition, possibly infected urine is daily poured out on to a dusty ground, and where

you have a huge native population to whom latrines and urinals are a superfluity. There the typhoid organism has every opportunity for distributing itself, and apparently it does not require the presence of water. In this respect we have incurred some, as I think unmerited, reproach from certain of our civilian friends; it has been inferred that the endemicity of typhoid fever in India and in our war camps was chiefly due to our slackness in the matter of attention to water supplies. What are the facts for India? I give you some figures which I collected a little while back, showing the mortality per thousand from two diseases which are usually classed as water-borne. The figures deal with those districts comprised in the old Bengal command, which I chose because it included the endemic zone for cholera.

MORTALITY PER 1,000.							
Decade	Remittent and continued fevers, including enteric fever						Cholera
1860-69	2.88	..	..	8.86
1870-79	3.71	..	..	3.35
1880-89	4.70	..	..	1.86
1890-99	7.81	..	..	1.25

Two facts come out of this table: one that we have taken care of our water supplies, as is shown by the diminution of the cholera death-rate; and secondly, that our care of the water has not had the slightest effect on the death-rate for typhoid fever, or at any rate, if it has had any effect, it has only been that it has prevented that rise which followed the introduction of short service from reaching a still higher level. The striking difference between typhoid fever and cholera is explained by the fact that typhoid bacilli stand drying and sun-exposure for a considerable time, whereas cholera vibrios are rapidly destroyed under these conditions, and therefore are almost necessarily dependent on water-carriage for their distribution. In this connection there will occur to your minds the epidemic among the Boer prisoners in Ceylon, which was reported by Quill;¹ the observations of Victor Vaughan on the flies in camp at Chickamauga, with their legs dusty with the lime from the latrines, and the findings of the American Commission on Enteric Fever during the Spanish-American War, all of which go to demonstrate the frequency of spread by means other than water—by flies, dust and personal infection. And these methods of distribution are more frequent in war camps, by reason of the fact that there one has large bodies of men of susceptible age, crowded

¹ Army Medical Department Report, 1900.

together on an invariably contaminated soil, sharing latrines which are even more primitive than those in use in India at the present moment; and, moreover, offering themselves as an easy prey to the disease by reason of the fatigue, nerve-strain and irregular feeding which are the necessary concomitants of war.

So, then, we have a microbe of universal distribution, capable of entering the body and causing disease in a thousand and one ways; a very different outlook from that which appeared a few years ago, when we thought that it should be possible to put one's finger definitely on every source of the disease; and when we deluded ourselves with the notion that if we could only secure that our troops never drank anything but boiled water and such like, we should be able to reduce enteric fever in our camps to infinitesimal proportions.

Is it possible by attention to water and by improved conservancy, to prevent the outbreak of enteric fever among troops in the field? I think not. In standing camps, at the base and on lines of communication, one can and should establish a conservancy system of a semi-permanent character; but I would remind you that the conservancy of Indian cantonments has been run on just such a semi-permanent camp system almost ever since we occupied the country. I suppose it is run as well as it is possible to run such an arrangement, yet even in peace time, when nobody is hustled, you know how ineffective it has been in preventing the spread of typhoid fever; you still get an incidence of somewhere about 20 per 1,000 per annum (which would mean 2,000 men *hors de combat* every year in an army of 100,000 men). How is such a system likely to work in war time, when everybody is hustled and overworked, and when appliances are very often short? In the field matters are even more favourable to the spread of the disease. You all know what happens when a regiment marches into camp. "Halt, pile arms, fall out," and every man promptly goes just outside the camp perimeter and empties his bladder. The camp is fouled from the very moment of arrival, for in any large body of troops there are certain to be one or more men cultivating typhoid bacilli in their urine. But supposing you stop that sort of thing, get the men halted, say a mile from camp, and let them empty their bladders there, meanwhile securing that there are proper latrines and urinals for use before the troops arrive; you only put off the evil moment. Directly night falls nobody dreams of going to the appointed urinals; the furthest they go is just outside their own tents or bivouacs. Officers and men are alike in this respect,

and I do not know how you are going to stop it altogether, unless you set one half of the force to police the other half. No doubt sanitary crimes of this sort may be lessened by education, but I would remind you that education does not prevent medical men from sometimes contracting syphilis in the usual way; and in the case of the typhoid bacilluric, it is not a case of a man injuring himself when he fouls the ground round his tent.

Then the latrines and urinals. You know how impossible it would be to construct proper boxed-in arrangements at every camp, and I fancy that in most cases we shall still have to stick to the old and filthy trench. We can, perhaps, make it a little less filthy than it has been at times in the past; we can, for example, by good arrangement secure that the sides of the trench where the men stand are not soaked with urine and ordure to be carried on the men's boots back to the lines; we can, perhaps, keep down flies a good deal, and stop latrine paper from being blown over the camp, but the arrangement will still be a trench, and will still, I fear, be a little more effective as an institution for the propagation of enteric fever than the latrine of Indian cantonments.

The use of such an arrangement as the latrine trough of the United States Army presupposes a good road and no hurry. It may be quite good in permanent or semi-permanent camps, but at the front I think it is pretty certain that most Generals would very soon class it very literally among the "impedimenta."

On the top of all this you have the fact that the very spirit which is most admirable in a soldier is the one which will fight most against you; good men will not go sick in war-time so long as they can crawl. I came across two of our own officers who almost certainly had typhoid fever during the South African War, and continued to do their duty throughout the attack (one of them gave me a history of fever—about 103° F.—and diarrhoea lasting three weeks, and I found that his serum gave a Widal reaction in a dilution of 1-100). There must have been many and many such incidents, so that there was constantly in camp a certain number of unisolated and early cases of the disease.

I hope that in all this I am not taken as belittling the value of sanitation in war. Nobody is more convinced than myself that the more effective the sanitation the less typhoid fever we shall have. But people do not go to war for the benefit of their health, and sanitarians in war time have to make continual compromises between what they know should be done, and what is possible under the circumstances. What I have said has been by way of

demonstrating the necessity for taking full advantage of any other measures for the prevention of enteric fever which promised to be useful ; and I would suggest that the burden of the sanitary officer would be considerably lightened, and the appearances of our war statistics greatly improved, if we took measures to prevent, as far as possible, the inclusion of typhoid carriers among the troops who took the field. And, secondly, if we took fuller advantage than we do at present of the system of inoculation, so as to reduce the susceptibility of the whole Army to the lowest possible point. These are both practical measures, which have the great advantage that they can be carried out in peace-time.

To take the question of typhoid carriers first: it seems almost silly to suggest that a man who has suffered from enteric fever should not be discharged from quarantine until one has exhausted every available means to find out whether he is or is not free from infection; and yet in how very few cases is the systematic examination which is necessary for this purpose carried out? We should be horrified at the idea of discharging a diphtheria patient before he had been found free from infection, and yet typhoid patients are regularly discharged without any bacteriological examination whatever. Why? It is not because the examination is impossible, but because of the difficulties in making the necessary arrangements. I know these are great, but I would suggest that they are not insuperable. The plan which has been proposed by several of our officers might be taken advantage of for this purpose; it is to collect typhoid convalescents in special dépôts away from other troops; there the necessary laboratory work could be carried out systematically, and with a minimum of trouble and expense; meanwhile the patients could continue their training so far as their health permitted, and they could lead a tolerably free life instead of fretting their souls out in hospital. If an officer or man proved, after a reasonable time, to be a confirmed typhoid-carrier, I should suggest the advisability of invaliding him. It goes without saying, that in such a dépôt the sanitary arrangements would have to be of the most perfect description, otherwise there would be a risk of producing a race of confirmed carriers by a process of continued re-infection. It seems reasonable to suppose that the adoption of some such measure as this would not only very materially reduce the number of primary foci of infection among the Army when it took the field, but would also be very valuable by reducing the incidence of enteric fever in peace time.

Lastly, I come to the reduction of the susceptibility of the

troops to infection by means of inoculation. If we could only, by inoculation, produce an absolute immunity from typhoid fever, all our other measures would be unnecessary so far as that particular disease is concerned. We cannot do that—not yet—but we can promise to reduce the incidence to between one-half and one-third of what it is at present. I give you the statistics showing the result of inoculation among seven large stations in India for the first six months of this year. For the use of these I am indebted to Colonel Leishman.

		Average strength		Cases		Deaths		Incidence per 1,000		Mortality per 1,000 strength
Not inoculated	..	8,113	..	173	..	42	..	21·32	..	5·18
Inoculated	..	2,207	..	15	..	3	..	6·8	..	1·36

You will see from these figures that the reduction in incidence and mortality which has resulted from inoculation is not a trivial one, nor one which one might be ashamed of putting alongside the reductions which have been due to improvements in water supply or conservancy in India. And I would suggest that they are sufficiently good to cause one to seriously consider whether the time has not now arrived for making anti-typhoid inoculation compulsory. Surely, if we ask a man to offer himself as food for bullets, it is a very small addition to ask him to submit to twenty-four hours inconvenience on two occasions, and it is not a matter which should be left to the discretion of the unlearned. We dictate to our men the way they should be clothed, where they shall be housed, and, more or less, what they shall eat; we protect them compulsorily against smallpox, by inoculation of an unstandardised vaccine of unknown composition, all for their health's sake; and yet we leave a matter on which a layman is infinitely less capable of forming an opinion than on most of these matters, to that layman's discretion. He is a sanguine man who thinks it possible to abolish typhoid fever from armies in the field altogether. Personally, I do not think it is possible, but I do think that we can reduce the incidence to far below the appalling figure at which it has stood in our former wars, providing that we all, clinicians, sanitarians, pathologists and administrators, co-operate to the same end.

DISCUSSION.

Lieutenant-Colonel A. M. DAVIES, R.A.M.C., advocated the exercise of extreme care in the inspection of men at the field of operation, and the segregation of suspicious cases for observation. He was of opinion that it was possible for diarrhœa to pass by a process of evolution into enteric fever.

Major J. RITCHIE, R.A.M.C., considered it impossible to segregate all cases of enteric in the field. He believed the bacillus to be specific, and that evolution did not occur. He predicted a great future for bacteriology and inoculation.

Captain C. F. WANHILL, R.A.M.C., alluding to dangers from native followers, advocated strict supervision of natives and improved sanitation in native camps.

Captain B. B. BURKE, R.A.M.C., instanced the occurrence of eleven consecutive cases of enteric fever among native mule drivers in India.

Surgeon-General Sir T. J. GALLWEY, K.C.M.G., C.B., A.M.S., doubted the possibility of performing a complete inspection in the field, and segregation. He regarded the suggestion of compulsory inoculation as most important.

Lieutenant-Colonel R. J. S. SIMPSON, C.M.G., R.A.M.C., quoted enteric fever statistics of the British and Japanese Armies in recent wars.

Lieutenant-Colonel C. C. REILLY, R.A.M.C., asked for further information on the statistics of inoculated men. The question was answered by Lieutenant-Colonel W. B. LEISHMAN, R.A.M.C.

Captain J. M. CUTHBERT, R.A.M.C., alluded to the susceptibility of troops recently arrived in India, and suggested the possibility of infection by water in the transports.

Captain J. C. KENNEDY, R.A.M.C., quoted enteric fever statistics of Malta, with special reference to the dry-earth and water-carriage system of drainage.

Major W. S. HARRISON, R.A.M.C., replied, and the proceedings terminated with an exhibition of microscopical specimens in the Pathological Class Room.

HOUSE-FLIES AS CARRIERS OF ENTERIC FEVER INFECTION.

BY LIEUTENANT-COLONEL A. R. ALDRIDGE.
Royal Army Medical Corps.

THE mosquito was suspected of carrying the infection of malaria many years before exact experimental proof led to practical measures for the prevention of the disease being directed on these lines; and similarly, though the rat-flea has for some years been under suspicion as a transmitter of plague, only since the results of the Indian Plague Commission's investigations have become known are preventive measures being vigorously and mainly pushed in accordance with these views. That the milk of infected goats could convey Mediterranean fever was known for some time before those concerned were convinced that this is the chief way by which it is spread, at any rate in Malta, and before measures were put in force which have led to such striking results.

It is now pretty universally admitted that water, milk, and shell-fish epidemics of enteric fever and direct personal contact, however complete the proof in some isolated outbreaks, fail to account for a very large proportion of the cases; but though for a number of years house-flies have been believed to play a part in its spread, we are still without experimental proof, and in the absence of this preventive measures in this direction are but half-hearted. It may therefore be not unprofitable to review the facts which have been ascertained.

Epidemiological evidence. — The medical literature of the American-Spanish and South African wars, the Army Medical Department and various Indian sanitary reports, contain innumerable illustrations of the close association of epidemics of enteric fever with a great prevalence of flies in dwellings, latrines, and places where food is stored.

The Board which investigated the extensive outbreaks of enteric fever which occurred in the United States camps during the Spanish war of 1898, probably the most searching investigation of its kind ever made, considered that "flies undoubtedly served as carriers of the infection."¹ They swarmed over the infected fæcal matter in the pits and then fed upon the food of the soldiers in the mess

¹ "Abstract of Report on the Origin and Spread of Typhoid Fever in the United States Military Camps during the Spanish War of 1898."

tents. In some instances where lime had been sprinkled over the contents of the pits, flies with their feet whitened with lime were seen walking over the food. The epidemics decreased with the approach of the cold weather and the disappearance of the flies.

Speaking of the same camps, Dr. M. A. Veeder says that he saw in the latrine trenches "material fresh from the bowel and in its most dangerous condition, covered with myriads of flies, and at a short distance there was a tent equally open to the air, for dining and cooking. To say that the flies were busy travelling back and forth between these two places is putting it mildly."¹

Of the Commission which reported on the epidemic of enteric fever and dysentery during the South African campaign, Colonel Notter considered that flies were "one of the chief means of spreading" these diseases, and Dr. Simpson that they "probably played an important part."²

Drs. H. H. Tooth and J. E. G. Calverley, relating their experiences in the South African campaign, say that "at Bloemfontein the flies were a perfect pest; they were everywhere and on every article of food. It is impossible not to regard them as important factors in the dissemination of enteric fever. Our opinion is further strengthened by the fact that enteric fever in South Africa practically ceases with the cold weather, and this was the case at Bloemfontein. It seems to us that the cold weather reduces the number of enteric cases by killing these pests."³

Mr. E. E. Austen describes a "buzzing swarm of flies" arising from a latrine in South Africa with a noise "faintly suggestive of the bursting of a percussion shrapnel shell." The latrine was certainly not more than one hundred yards from the nearest tents, if as much, and at meal-times the men's mess-tins, &c., were always invaded by flies. A tin of jam, incautiously left open for a few minutes, became a seething mass of flies (chiefly *Pycnosoma chloropyga*, Weid.)."⁴

Dr. A. B. Dunne says, "The plague of flies which was present during the epidemic of enteric at Bloemfontein in 1900 left a deep impression on my mind. . . . Nothing was more noticeable than

¹ M. A. Veeder, "Flies as Spreaders of Disease in Camp," *New York Medical Record*, vol. liv. (September 17th, 1898), p. 429.

² "Report of the Commission on the Nature, &c., of Dysentery, and its Relation to Enteric Fever, 1900."

³ H. H. Tooth and J. E. G. Calverley, "A Civilian War Hospital."

⁴ E. E. Austen, "Flies as Disseminators of Enteric Fever," *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, vol. ii., p. 651.

the fall in the admissions for enteric fever coincident with the killing off of the flies on the advent of the cold nights in May and June. In July, when I had occasion to visit Bloemfontein, the hospital there was half empty, and had practically become a convalescent camp."¹

Reporting on an outbreak of enteric fever among the Boer prisoners and their guard at Diyatalawa Camp, Ceylon, Lieutenant-Colonel (now Surgeon-General) Quill notes that "during the whole period that enteric fever was rife in the Boer camp, flies in that camp amounted almost to a plague, the military camp being similarly infested, though to a less extent. The outbreak in the Boer camp preceded that among the troops; the two camps were adjacent, and the migration of flies from one to the other easy."²

Dr. F. M. Sandwith remarks that in Egypt and the Soudan flies "often alight on milk and other exposed food when coming direct from filth."³

That the two places in Indian barracks where flies are most common are the latrines and kitchens is a matter of every-day observation, the reason, no doubt, being that in the former they find the most suitable place for depositing their eggs, and in the latter their natural food. In reporting on an outbreak of enteric fever at Ambala, Major Weir, describing the latrines of the British cavalry regiment, says that most of the pans were half or quite full, and flies were very numerous in them and on the seats, which latter were soiled by the excreta conveyed by the flies' legs. The plague of flies was stated by the soldiers to be so bad that in the mornings the men could hardly go to the latrines. Major Weir followed men from the latrines to the barrack-rooms and found that flies were carried on their clothes from the one to the other.⁴

On looking over the reports of nine outbreaks of enteric fever of considerable size which I have investigated within the last seven years in India, I find that in five a great prevalence of flies is noted. Two of these outbreaks occurred at Meerut from October to December, an unusual time for this station, where the enteric

¹ A. B. Dunne, "Typhoid Fever in South Africa," *British Medical Journal*, 1902, ii., p. 622.

² R. H. Quill, "Report on an Outbreak of Enteric Fever at Diyatalawa Camp, Ceylon, among the 2nd King's Royal Rifles," *Army Medical Department Report*, 1900, Appendix iv., p. 425.

³ F. M. Sandwith, *The Practitioner*, vol. lxxii., No. 427 (January, 1904, p. 15).

⁴ J. C. Weir, *Army Medical Department Report*, 1902, p. 207.

fever season is usually the spring. Flies are usually comparatively few in these months, but in these years they were in great numbers, and were noticeably more numerous in the British cavalry lines than in the other barracks. The cavalry regiment had in one outbreak forty-three out of a total of fifty-seven cases, and in the other forty-three out of a total of fifty-one for the whole cantonment, their strength being considerably less than one-third of the total garrison.

Of the four outbreaks in which the prevalence of flies was not noted, in one the evidence that it was spread by milk was very strong, and a second was one of the clearest cases of water-borne epidemics that I am acquainted with.

It is a well-ascertained fact that enteric fever is particularly prevalent where dry methods of removal of excreta, such as pail and earth closets and trench latrines, are in use; that is, where flies have ample opportunity of crawling over the excreta, which they have not in water-closets. Thus, in the Leicester epidemic of 1894, one street showed five times as many infected houses among those using the tub system as among those having water-closets and sewers. In the same year at Newcastle, cases were twice as numerous in houses with the dry-earth system as in those with water-closets; and in Birmingham the incidence was one and a-half times greater with pails than with water-closets.¹ In Nottingham during the ten years 1887 to 1896, the incidence was one case for every 120 houses having the pail system, and one case for every 558 houses having water-closets.² The following table shows the results which have followed the substitution of sewers for various dry methods³ :—

DEATH-RATE PER 1,000 FROM ENTERIC FEVER						
Before sewerage				After sewerage		
Frankfort	..	..	0·8	..	..	0·24
Danzig	..	..	0·9	..	..	0·18
Munich	..	..	2·42	..	Partial	1·33
				..	Improved	0·87
				..	Further improved	0·17

In the Bermuda barracks a dry-earth system was gradually replaced by water-carriage, commencing in 1897, a few closets remaining in 1903, with the following results :—

ADMISSION RATE PER 1,000 FOR ENTERIC FEVER								British troops
1888-97	..	..	..	..	..	..	..
1898-05	..	..	..	..	..	..	..	34·8
								16·3

¹ Moore, quoted by Munson, "Military Hygiene," p. 539.

² *Lancet*, vol. ii., 1902, p. 1488.

³ Oldright, quoted by Munson, "Military Hygiene," p. 541.

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The 1st and 3rd Divisions, 7th Army Corps, of the United States Army at Jacksonville, in 1898, were under similar conditions as regards site and water-supply, but the former had water-carriage of their excreta, the latter open pits. The incidence of enteric fever was:—

First Division	..	..	..	..	..	150·3 per 1,000
Third Division	..	..	..	..	..	250·3 „

It is a matter of common knowledge that flies are to be found in greater numbers in the lines of mounted corps than in those of dismounted; the incidence of enteric fever is also greater in mounted corps:—

BRITISH ARMY IN INDIA, 1902-5							UNITED STATES ARMY, 1890-96		
RATIOS PER 1,000 PER ANNUM									
			Admitted		Died			Admitted	
Cavalry	..	..	41·1	..	7·76	..	..	5·74
Infantry	..	..	15·5	..	3·32	..	..	4·74

There seems to be no doubt that in India, speaking generally, the seasons of greatest prevalence of enteric fever correspond pretty closely with the seasons of greatest prevalence of flies. In the following table the months of greatest prevalence of flies have been taken from Major Roberts' "Enteric Fever in India,"¹ omitting stations with an average strength of under 500. The information was obtained by him from the officers commanding the station hospitals in 1904, and as it merely expresses general opinions, in some cases formed on a limited knowledge of the place, it cannot, of course, be taken as absolutely correct; but as far as it goes it shows a striking general agreement in the seasons of prevalence of enteric fever and of flies.

More accurate information on this point might be obtained by exposing a certain surface, say one square foot, of "tangle-foot" spread on paper in a certain number of different situations for a fixed time once a week throughout the year, the same conditions being always adhered to. The average of the number of flies on each square foot would show, for that station, their relative prevalence during the different seasons.

One of the most striking facts in the epidemiology of enteric fever in India, is the frequency with which small groups of cases come from one barrack-room or section of a room, to be followed, after an interval corresponding closely with the incubation period of the disease, by another case or cases. As messes are arranged by "sections," fly-infected food and infected latrines would account for this.

¹ A. E. Roberts, "Enteric Fever in India."

TABLE I.—MONTHS OF GREATEST PREVALENCE OF FLIES (+).

From Roberts' "Enteric Fever in India."

The figures show the mean monthly admissions for enteric fever among British troops, from 1902 to 1906, at stations with an annual average strength of 500 and over.

Station	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Remarks
Peshawar	2·0	·2	·4	·6	3·8	13·2	10·2	1·6	2·0	2·0	2·8	1·2	
Nowshera	—	+	+	·2	·6	·6	1·2	·2	·4	·2	·2	·2	
Rawal Pindi	3·2	1·6	1·6	4·6	7·8	10·0	4·4	3·2	3·6	3·4	4·8	11·4	
Lahore Cantonment .	2·0	—	+	+	2·4	2·6	1·4	1·2	1·0	·4	1·0	1·4	
Ferozepore	·8	·6	·4	2·6	3·6	·8	·6	·6	·2	·6	·2	1·4	
Multan	·2	—	+	+	2·6	1·4	·6	·2	·2	—	·4	·2	
Ambala	5·8	3·2	6·8	5·4	7·6	3·0	1·6	1·0	1·0	2·2	9·4	11·4	
Dagshai	—	—	—	·8	·6	1·6	1·2	·4	—	—	·2	·2	
Quetta	·8	·2	·6	1·2	1·0	4·8	7·2	6·8	11·0	5·0	11·4	2·0	
Karachi	·6	·8	·4	+	+	+	·2	·2	·2	—	·8	1·4	
Mhow	5·2	3·2	8·2	10·0	7·0	2·4	6·8	3·8	2·6	2·2	1·4	1·6	
Nasirabad	1·2	·6	8·8	4·6	1·8	·2	—	3·4	2·0	2·4	1·6	·4	
Jhansi	+	+	+	4·2	1·4	—	·6	4·2	2·8	3·0	+	3·2	
Colaba	·2	·6	·4	·4	·4	—	—	·2	·6	·2	·2	·2	
Kirkee	·4	·6	·6	1·0	1·2	·6	2·6	7·6	5·2	2·6	·8	·4	
Kamptee	—	·4	—	1·6	1·2	·8	·6	1·4	2·0	1·8	·2	—	
Jubbulpore	·2	·6	2·4	3·6	3·0	1·4	3·4	3·8	2·6	·4	·2	1·2	
Meerut	2·8	2·8	2·6	9·6	12·0	7·0	2·0	7·4	2·6	5·0	12·6	10·8	
Bareilly	2·8	·4	1·0	2·0	2·2	·6	·4	1·0	·8	+	·8	1·0	
Ranikhet and Chau- battia	—	·2	1·4	5·0	4·8	4·4	2·2	3·8	2·0	·6	·4	—	
Chakrata	—	—	1·0	2·2	+	·6	·8	1·4	·8	·2	·2	—	
Cawnpore	·6	—	·8	1·6	1·6	1·0	·4	·6	1·0	1·8	·6	2·2	
Sitapur	3·4	—	1·4	1·0	·8	·8	·2	·2	·2	—	—	—	
Fyzabad	1·4	1·0	·6	2·4	4·8	·4	·6	·8	·6	·8	·8	·6	
Bangalore	1·6	2·4	4·8	1·8	4·8	5·6	8·6	5·2	3·0	3·4	1·2	1·0	
Madras	·6	·2	·6	·6	·2	—	·2	·2	·4	·8	·8	·2	
Bellary	·4	1·0	·2	1·4	·4	·6	·2	·4	·4	+	+	·6	

Singularly free from flies.

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As will be seen later, house-flies are bred in enormous numbers in the trenches in which night-soil is deposited in India; the numbers at certain seasons in many stations being so great as to make it probable that a large proportion of the flies found about barracks come from this source. Now, a study of the incidence of enteric fever shows that stations where there are no filth trenches, or where they are a considerable distance from the barracks, all have an admission-rate below the average, and all but one less than half the average. This is shown in Table II., in which the stations having no night-soil trenches, or only at a considerable distance, are marked with an asterisk. In all the remainder the night-soil is trenched, seldom more than a mile away.

TABLE II.—AVERAGE ANNUAL ADMISSION-RATE PER 1,000 AMONG BRITISH TROOPS FOR ENTERIC FEVER IN ALL STATIONS WITH AN AVERAGE STRENGTH OF OVER 500.

*Bombay ¹	.. 2·68	Cawnpore	.. 10·74	Bangalore	.. 20·12
*Calcutta ¹	.. 3·08	Jullundur	.. 10·84	Agra	.. 20·68
*Lebong ²	.. 3·48	Kamptee	.. 11·26	Quetta	.. 21·12
*Rangoon ¹	.. 4·88	Deolali	.. 11·80	Rawal Pindi	.. 21·98
*Karachi ¹	.. 5·96	Bareilly	.. 12·18	Peshawar	.. 24·64
Nowshera	.. 5·76	Wellington	.. 12·88	Dinapore	.. 27·22
*Aden ⁴	.. 5·76	Ferozepore	.. 13·92	Ambala	.. 28·72
Theyetmyo	.. 6·06	Bellary	.. 14·72	Jubbulpore	.. 30·62
Gharial	.. 6·22	*Sitapore ²	.. 14·90	Kirkee	.. 31·14
*Chakrata ²	.. 6·82	Muttra	.. 16·80	Poona	.. 31·24
Multan	.. 7·16	Dalhousie	.. 17·04	Jhansi	.. 34·04
*Dagshai ²	.. 7·66	Fyzabad	.. 17·06	Mhow	.. 35·06
Allahabad	.. 8·08	Ranikhet	.. 18·14	Lucknow	.. 36·32
*Madras ¹	.. 8·58	Secunderabad	.. 19·62	Meerut	.. 41·66
Ahmednagar	.. 10·26	Sialkote	.. 19·76	Nasirabad	.. 43·36
Belgaum	.. 10·34	Lahore	.. 19·78		

¹ Sewage deposited in municipal sewers. In Rangoon city sewers have existed for a number of years; they have received the cantonment sewage since 1898.

² Burnt in incinerator. At Sitapore sewage from the civil station is trenched about 1½ miles from the barracks.

³ Removed outside cantonment and used for cultivating land.

⁴ Removed outside cantonment ("some miles in Madras") and trenched.

This table is a striking comment on the authorised method of sewage disposal in Indian cantonments.

Bacteriological evidence.—Celli, in 1888, showed that flies bred on pure cultures of *Bacillus typhosus* were able to transmit bacilli in their excrement, and inoculations on animals showed that the bacilli were virulent.¹

¹ Celli, quoted by G. H. F. Nuttall, "On the Rôle of Insects, Arachnids and Myriapods as Carriers in the Spread of Bacterial and Parasitic Diseases of Man and Animals." *Johns Hopkins Hospital Reports*, vol. vii, pp. 30-31.

Ficker found that flies fed on typhoid cultures can contaminate objects on which they rest. Typhoid bacilli were found on the head, feet and wings and in the intestines of the flies.¹

Firth and Horrocks, experimenting with house-flies (*Musca domestica*) bred in the laboratory, found that they could transfer typhoid bacilli from emulsions of the organism and from enteric excreta to which cultures of *B. typhosus* had been added to broth and agar exposed in the cage.²

From flies caught in two undrained privies, on the fences of two yards, on the walls of two houses, and in the room of an enteric fever patient, Hamilton, in eighteen experiments, recovered the *B. typhosus* five times.³

From flies caught in a barrack latrine in India during an outbreak of enteric fever, I isolated a bacillus apparently belonging to the paratyphoid group. The flies were caught in a net and transferred to tubes of broth; from this plates of Drigalski's and Endo's media were inoculated. The bacillus was microscopically indistinguishable from the *B. typhosus* (it was not, however, stained for flagella). Grown on agar, gelatine, broth, lactose, glucose, and neutral-red media, it behaved as *B. typhosus*, except that milk was clotted, without acid formation, in seven days. The bacilli were agglutinated by sera from enteric fever patients, in some cases in rather greater, in some rather less dilutions than the laboratory culture of *B. typhosus*. The growth died out before more complete tests could be applied; but there seems little doubt that it belonged to the paratyphoid group, some of which are agglutinated by the sera of typhoid patients in dilutions as high or higher than the *B. typhosus*.⁴ More extended observations on these lines, during the prevalence of enteric fever, might lead to useful results. It is obvious that the number of infected flies must, even during an epidemic, be but a small proportion of the total present; it would therefore be necessary to examine a large number caught in latrines, kitchens, and enteric fever wards.

In two such experiments with six and seven flies Buchanan failed to find colonies of *B. typhosus*; from this small number

Ficker, *Archiv f. Hyg.*, Bd. xlvi., pp. 247-282.

² R. H. Firth and W. H. Horrocks, "An Inquiry into the Influence of Soil, Fabrics and Flies in the Dissemination of Enteric Infection." *British Medical Journal*, vol. ii., 1902, p. 936.

³ Hamilton, *British Medical Journal*, 1903, epitome, p. 149.

⁴ *Bull. de l'Institut Pasteur*, vol. v., p. 99 (February 15th, 1907).

success could hardly be expected. But by making house- and blue-bottle flies walk over enteric excreta and then transferring them to plates of bile-salt, lactose, neutral-red and crystal-violet agar, typhoid colonies were found on the latter; in one experiment one colony of *B. typhosus* out of a total of twenty-two, and in a second two out of sixty of other species.¹

Typical colon bacilli can readily be isolated from flies; but as house-flies are almost all bred in excrement, either human or animal, and as the *B. coli* is probably a normal inhabitant of their intestinal canals, this cannot be held to be proof that they have recently been in contact with human excrement.

The Life-history and Habits of House-flies.—Though in most parts of the inhabited world house-flies are among the commonest of household insects, yet their life-history does not seem to have been accurately worked out until recent years. In most of the older works on the subject it is stated that the common house-fly (*Musca domestica*) breeds almost exclusively in horse-dung. This may be true of places where other suitable material is not to be found, but later observations have placed it beyond all doubt that where collections of human excrement are exposed the flies will breed in enormous numbers in this.

An exhaustive investigation of the insect fauna of human excrement, with special reference to the spread of enteric fever, was made by L. O. Howard in America.² He found that even in the presence of kitchen garbage, cow-dung and human excrement, *M. domestica*, in confinement, oviposited exclusively on horse manure. In the absence of the latter substance he noted egg-laying on decaying fruit and on cow-dung, but the resultant larvæ failed to develop. Later, on examining the latrine trenches of a militia camp, he found large clusters of the eggs, in some cases 2 inches wide and $\frac{1}{2}$ inch deep, on the fæces. Following up this observation, in the course of his investigations he found thirty-six species of flies which bred, and forty-one others were caught, on human excrement, besides a number of beetles and hymenopterous parasites. In order to determine which of these also frequent human habitations and human food, 23,087 flies were caught in

¹ R. M. Buchanan, "The Carriage of Infection by Flies," *Lancet*, 1907, vol. ii., p. 216.

² L. O. Howard, "A Contribution to the Study of the Insect Fauna of Human Excrement," *Proceedings of the Washington Academy of Science*, vol. ii., pp. 541-548 (December, 1900).

rooms in which food supplies were ordinarily exposed in ten different States. Of these 98 per cent. were *M. domestica*, the next commonest being the "little house-fly" (*Homalomyia canicularis*). The stable-fly (*Muscina stabulans*), blue-bottle (*Calliphora erythrocephala*), green-bottle (*Lucilia caesar*) and three other species were found.

In Indian cantonments the opportunities for flies to gain access to and lay their eggs on human excrement are unlimited. Pail closets are almost universally used in barracks and by the civil population, and the Indian variety of the common house-fly (*M. domestica determinata*, Walker) is at certain seasons of the year present in enormous numbers. In almost all cantonments the night-soil is disposed of by burying it in "trenches" about one foot or less deep, and by turning up the soil of these, larvæ and pupæ can almost always be found, the numbers varying with the season. The numbers of kites and crows to be seen on the trenching grounds searching for maggots is a pretty sure indication of the profusion of these; the droppings of the birds indicate where the larvæ are collected. From one-sixth of a cubic foot of soil removed from a trench at Meerut and placed in a cage, 4,042 flies were hatched; and Lieutenant Dwyer collected 500 from one cage covering 3 square feet of a trench at Mhow.

Since attention has been called to this¹ a number of observers have confirmed it at various stations. Lieutenant (now Captain) Franklin,² from observations at Shillong, failed to find larvæ in dust-heaps, &c., where the adult insects were found in great numbers, but found them in human excrement, and concludes that this is the material in which they commonly breed.

Lieutenant-Colonel O'Sullivan, writing early in June from Rawal Pindi, says: "This, as you know, is the worst month for enteric here. We have had, and still have, a swarm of flies from the trenching grounds."

Lieutenant-Colonel Haines writes:³ "In Ambala we have exceptionally well-kept trenching grounds, yet the fly breeds there in billions."

¹ A. R. Aldridge, "The Spread of the Infection of Enteric Fever by Flies," JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, vol. iii., p. 349; also *Army Medical Department Report*, 1904, p. 241.

² G. D. Franklin, "Some Observations on the Breeding Ground of the Common House-fly," *Indian Medical Gazette*, September, 1906, p. 349.

³ H. A. Haines, "Small Incinerators," *Indian Medical Gazette*, June, 1907.

Major F. Smith,¹ speaking of his experiences in South Africa, says: "On visiting a deserted camp during the recent campaign, it was common to find half-a-dozen or so open latrines containing a foetid mass of excreta and maggots."

The adult flies are not, as a rule, to be found in great numbers at the trenching grounds, no doubt because they do not find their food there; but the number of larvæ, pupæ and young flies, many with their wings not yet expanded, which are at certain seasons to be seen on turning up the earth, are so great as to make it difficult to avoid the conclusion that a very large proportion of the flies to be found in cantonments are bred in the trenches. It was found in the laboratory that when soil containing larvæ was covered with six inches of dry earth, free from larvæ, the flies had no difficulty in emerging through this, and in actual trenches flies can be seen emerging through more than a foot of loamy soil. When soil containing larvæ was kept saturated with water no flies appeared. It seems, therefore, that a certain amount of warmth and moisture is necessary for their propagation; the cold of winter, the dryness resulting from the intense heat of summer, and the saturation of the soil during the rains being prejudicial to their propagation. These adverse conditions, acting at different seasons and in different degrees, are no doubt important factors in the seasonal prevalence of flies in different parts of the country.

There seems no doubt that, under the conditions of Indian conservancy, the eggs are laid in the excrement in the latrines. Volatile substances, carbolic acid, chlorinated lime, cresol and kerosine have of late been used in the latrine pans of British troops to keep flies from the excrement; and Lieutenant Dwyer reports that at Mhow, in the trenches filled from these barracks, there were far fewer flies than in trenches filled from other latrines.

It is evident that the access of flies to the excrement in the latrines is a double danger, in that they there become contaminated with matter which frequently contains the *B. typhosus*, and at the same time lay their eggs and so multiply.

Though, from statements in most works on the subject, one would expect to find larvæ in large numbers in horse-dung, neither in the collections of stable litter in the lines, nor after it has been buried, have I been able to find them in large numbers—though they are to be found at times in old collections—nor in collections

¹ F. Smith, "Municipal Sewage," *Journal of Tropical Medicine*, vol. vi., 1903, p. 285.

of garbage. This seems to have been the experience of other observers.

Bouché¹ states that the house-fly breeds in fowl as well as horse-dung. Major F. Smith² found flies breeding in isolated deposits of excrements, human (*M. entaniata* and *Anthomyia tonitruui*), dog (*M. entaniata*), cow (*M. domestica* and *M. entaniata*), horse (*M. domestica*), monkey and fowl (species not specified). From the body of a dead crow *Pycnosoma orientale* was bred. When the excrement became dried the larvæ made their way into the ground to a depth of 5 or 6 inches, and from this, both *in situ* and when removed, flies emerged.

According to Howard³ and Packard⁴, the female house-fly lays about 120 eggs (Porchinsky says 120 to 160); the eggs are hatched in eight to twenty-four hours; the larval stage lasts from five to seven days, and the pupal stage the same time. By turning up the soil of filth trenches of different ages the stages can be approximately followed; they appear to be about as follows⁵:—

	Hot Weather Days				Cold Weather Days			
Eggs	1	..	..	..	2
Larvæ	5	..	..	..	14
Pupæ	3	..	..	..	5

Lieutenant Dwyer found fully-developed flies as early as the sixth day, and in winter at Lucknow Captain Tilbury Brown found flies emerging from trenches twenty-five days old. Major Smith obtained flies (*M. domestica*) from horse-dung on the eighth day in summer at Benares.

Although, as already shown, a large number of different species of flies breed in human and other excrement, only those which frequent human habitations can be considered of importance in the

¹ L. O. Howard, "A Contribution to the Study of the Insect Fauna of Human Excrement," *Proceedings of the Washington Academy of Science*, vol. ii., pp. 541-548 (December, 1900).

² F. Smith, "House-flies and their Ways at Benares," *Journal of the Royal Army Medical Corps*, vol. ix., pp. 150-155.

³ "L. O. Howard, "A Contribution to the Study of the Insect Fauna of Human Excrement," *Proceedings of the Washington Academy of Science*, vol. ii., pp. 541-548, December (1900).

⁴ Packard, "On the Transformation of the Common House-fly," *Proceedings of the Boston Society of Natural History*, vol. xvii., p. 136.

⁵ A. R. Aldridge, "The Spread of the Infection of Enteric Fever by Flies," *JOURNAL OF THE ROYAL ARMY MEDICAL CORPS*, vol. iii., p. 349; also *Army Medical Department Report*, 1904, p. 241.

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spread of enteric fever. Of many hundreds caught in barracks and their surroundings, mostly in the United Provinces, and examined, considerably over 90 per cent. were *M. domestica*. Major Smith,¹ at Benares, found *M. domestica* and *M. entaniata*, but does not mention the relative abundance of the two.

The following flies, of which a few specimens were found, were kindly identified for me by Mr. E. E. Austen, of the British Museum. On account of the specimens being damaged, the exact species could not in all cases be identified.

Family *Muscidae*.

Ulidia.—(Bred from filth trench, Lucknow, February). Apparently distinct from the four species previously described from India.

Family *Anthomyiæ*.

Hylemyia.—(Bred from filth trenches, Lucknow, February).

Ophyra.—(Caught in latrine at Bareilly, January, and at filth trenches, Lucknow, February).

Family *Ortalidæ*.

Morellia indecora, Walker. — (Caught in barrack, Lucknow, January.)

Though, as already pointed out, it cannot be claimed that the case against the house-fly amounts to proof, yet it must be admitted that there is fairly strong presumptive evidence, and that the theory fits very closely with the epidemiology of the disease as met with in India.

If, then, the fly accounts for a large part of the enteric fever in India, our lines of prevention seem pretty clear, viz.: (1) The protection of the excreta in the barrack latrines from flies, where they both become infected and lay their eggs, and (2) the abolition of the trench system of disposal; for though improved latrines in barracks may prevent the flies laying their eggs there, it is not likely that similar latrines will be provided for the native population of cantonments.

SUMMARY.

(1) There is very general agreement among observers that water, milk and shell-fish epidemics and direct personal contact, will not account for a large proportion of the cases of enteric fever among troops in India and on service.

¹ F. Smith, "House-flies and their Ways at Benares," JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, vol. ix., pp. 150-155.

(2) There is a large mass of evidence pointing to the close association of epidemics of enteric fever with a great prevalence of house-flies in dwellings, places where food is stored, and in latrines.

(3) As far as observations up to the present have been made, the seasonal prevalence of flies agrees very closely with that of enteric fever.

(4) Flies are bred at certain seasons of the year in enormous numbers in latrine trenches, and in excrement after it has been buried in comparatively shallow trenches.

(5) Statistics show that, in Indian cantonments with 500 British troops and over, the five having the lowest enteric fever admission-rates have no filth trenches; and in the only remaining ones in which there are no trenches, or only at a considerable distance from barracks, the rates are much below the average.

(6) The persistently-increased prevalence of the disease among mounted troops as compared with dismounted, the occurrence of groups of cases in the same tent or section of a barrack-room so frequently noticed, and the greater incidence in towns and parts of towns where dry methods are in vogue as compared with water carriage of sewage, would all be explained by fly infection.

(7) It has been demonstrated by bacteriological methods, that flies are capable of transferring active bacilli from the excreta of enteric fever patients to culture media.

THE SPECIFIC PROPHYLAXIS AND TREATMENT OF BACTERIAL DYSENTERY.

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THE object of the following brief article on the subject of dysentery is to endeavour to arouse some practical interest in the advances which have been made with regard to the specific prophylaxis and treatment of the disease. A considerable amount of scientific energy has been expended on the subject during the past few years, but the results obtained would appear to have aroused little attention in this country. Only very meagre reports of clinical tests as to the value of specific remedies have so far appeared.

Many opportunities must occur to members of the Naval, Military, Indian and Colonial Medical Services to investigate the causation of outbreaks of dysentery, and in suitable cases to test the value of the methods of treatment which have been suggested as the result of recent experimental investigation. In view of what has been already published by many workers on the subject, such tests appear highly desirable, and these could be most satisfactorily made during small epidemics, and not in time of war, when stress of work must make it extremely difficult to arrive at accurate conclusions as to the value of a particular remedy or method of treatment.

It is almost unnecessary to refer here to the importance of the group of diseases included under the designation "dysentery." "*It is one of the four great epidemic diseases of the world.*"—Osler. In civil life in various regions it constitutes an ever-present danger to life and hindrance to activity, and even where under ordinary circumstances it is comparatively rare, famine or defective food or water supply may cause it to assume a serious epidemic character.

Its gravity in war has been constantly recorded, from the time of the pestilence during the Peloponnesian war, down to most recent times. A striking example of the terrible effects produced as a war pestilence, occurred during the War of Secession of the United States. Woodward states that among the Federal troops the number of deaths due to dysentery and diarrhoea was 37,794, or nearly 30 per cent. of the whole mortality, and among the prisoners at Andersonville the deaths from this disease amounted to 58·7 per

cent. of the deaths from all causes. In many other recent wars the havoc worked by the disease has been hardly less appalling. In the Franco-Prussian War there were 38,652 cases (= 49 per 1,000), and of these 2,380 died (= 6.2 per cent. of those affected). Among the officers there were 223 cases with 25 deaths. The death-rate alone, however high, is an inadequate measure of the importance of the disease to armies in the field, for the number invalided is usually very high in proportion to the death-rate.

In this connection it is necessary to refer briefly to some of the most important facts which have been established with regard to the pathogenesis of dysentery. As early as 1873 Loesch had demonstrated the presence of amœbæ in the ulcerated gut in dysentery, an observation confirmed in Egypt by Koch and extended by Kartulis, who came to the conclusion that amœbæ were the sole cause of tropical dysentery. Notwithstanding the fact that amœbæ can occasionally be demonstrated, especially in certain regions, in the dejecta of normal individuals, the important rôle played in the pathogenesis of a certain type of dysentery by amœbæ, probably of a particular species—*Amœba histolytica*—is now pretty generally admitted. On the other hand, in many epidemics of dysentery, especially in temperate regions, the most careful investigation failed to demonstrate the presence of amœbæ.

From such observations it became probable that dysentery was not due to a single cause, but that other agents besides the amœbæ may be concerned in the production of the dysenteric condition. Numerous communications were made, suggesting a bacillary origin of many cases of dysentery, but nothing of a convincing nature appeared until the work of Shiga in 1898, when he succeeded in isolating a bacillus, which he regarded as the cause of the disease, from a number of cases during an epidemic in Japan, which from June to December of 1897 claimed 22,300 victims out of 89,000 cases (= 24 per cent.).

The same organism was found in Germany independently by Kruse, and wherever dysentery epidemics were investigated this bacillus, or bacilli closely related to it, was demonstrated, and its causal relationship to certain outbreaks of the disease is now generally admitted. It appears to be the cause of certain outbreaks of "Asylums' Dysentery" in this country, as was first shown by Eyre. In 1900, Flexner and Strong isolated from dysenteric stools in the Philippine Islands bacilli which they thought at the time to be identical with the Shiga bacillus, but which later were found to differ in several characteristics, such as in possessing the power of

producing indol and of fermenting mannite. That this bacillus has a causal relation to certain outbreaks seems probable, but whether it must be regarded as a separate species or a mere variety of the Shiga type, is still an open question.

Regarding the subject from the point of view of what is known as to its causation, we must clearly separate amoebic dysentery from bacillary dysentery, and under bacillary dysentery it is well provisionally to differentiate at least the two types, *e.g.*, Shiga-Kruse type and the Flexner-Strong type. It is quite conceivable, and is indeed probable, that several organisms besides those referred to may be capable of producing dysentery: but the frequency with which these bacilli occur, and their wide distribution, made it desirable that their presence should be excluded before admitting a pathogenic rôle to another organism.

In regard to the amoebic type we have, so far, no knowledge of a specific prophylaxis or treatment, but in regard to the bacillary type we have a considerable amount of definite information with which I now propose to deal.

Prophylactic Inoculations of Bacillary Vaccines.—Shiga carried out on himself an experiment in this direction on the lines first suggested by Pfeiffer and Kölle in the case of typhoid and cholera. He injected subcutaneously a suspension (about half an agar tube) of bacilli killed by heating to 60° C. for twenty minutes. The local and general reactions following the injection were much more prolonged than in the case of typhoid and cholera inoculations, and Shiga concluded that this method was not likely to be suitable for general use. He therefore carried out some experiments on animals with the object of testing the value of a combined method in which crushed bacillary bodies were injected along with an immune serum. He obtained satisfactory results in the guinea-pig, and found that in that animal the immunity lasted for three weeks.

In man he injected one-half öse of a killed agar culture along with 0.5 cc. of an immune serum of high value, followed in three to four days by the injection of twice the amount of culture without serum. The reaction by this method was much diminished, and protective substances could be demonstrated twenty to thirty days after the injections. About 10,000 individuals in the area affected by the disease were inoculated by this method, but, unfortunately, the records were unsuitable for statistical investigation. As far as the facts permitted a deduction to be made, it appeared there was no marked effect produced upon the incidence of the disease, but that the mortality fell from 30 to 40 per cent. to almost nil. From

this experience Shiga concluded that more reliance was to be placed upon a serum prophylaxis and treatment than on the employment of bacillary vaccines. It is possible, however, that in chronic cases a combined serum-vaccine treatment on these lines might give good results.

Treatment by Specific Serum.—Shiga was the first to prepare an anti-dysentery serum by injecting horses with the bacillus which he had isolated. Using 10-20 cc. doses of this serum in 300 severe cases of dysentery the death-rate was about 7 per cent., whereas in 200 cases of the same outbreak which were treated by ordinary methods the death-rate was 22 per cent. The serum appeared to have a distinct effect in reducing the number of evacuations and in shortening the duration of the disease to about one-half.

Kruse obtained similar results in Germany in a small number of about 100 cases. The mortality fell from about 11 to 5 per cent.

Both authors attribute the action of the serum entirely to a bactericidal effect, and the experimental data on animals were of a very convincing nature. Shiga pointed out that this was the first serum which, when injected subcutaneously, had been demonstrated to possess a curative action on a disease of the alimentary canal, and contrasted the results with those obtained by similar means in typhoid or cholera. He laid great stress on the fact that the anti-dysentery serum found a suitable complement in human serum. Neither Shiga nor Kruse made any statement as to the possibility that the bacillus produced a toxin capable of stimulating the animal body to the formation of an antitoxin. Indeed, Kruse states definitely that in this case there was no question of the serum being antitoxic, "Since neither do the bacilli secrete an especially powerful toxin nor does the cause of the disease, with rare exceptions, present the picture of an intoxication."

A most important addition to the knowledge and understanding of the whole subject of bacillary dysentery and a stimulus to the hopefulness of arriving at a successful serum for the treatment of the disease, was given by the work of Todd in the Lister Institute, and Rosenthal in Moscow. These workers independently showed that it was possible to obtain from cultures of the Shiga-Kruse bacillus a soluble toxin, and that the serum obtained by immunising animals with this toxin possessed definite anti-toxic properties. Their results were confirmed by Kraus, and Kraus and Doerr in Vienna.

To refer somewhat more in detail to these results, it was found that the filtrates from cultures about one month old which had

been grown upon a particular alkaline broth, when tested on rabbits showed a very definite toxic action after a latent period of from one to three days. Severe diarrhoea sets in with paralysis, at first of the hind and then of the fore limbs, and ultimately the muscles of the trunk and neck. The animal loses weight and dies in from one to five days. The chief naked-eye lesions are found in the large gut, which contains a slimy mucous fluid, with congestion, hæmorrhages and even erosions of the mucous membrane. The lungs are congested and sometimes small hæmorrhages are present. The rabbit and horse are very susceptible to the action of the toxin; the guinea-pig, rat, mouse and monkey much less so. The results with the Shiga-Kruse bacillus were in sharp contrast to those obtained with the Flexner bacillus, in which case under parallel conditions the filtrates possess a very feeble or no toxic action, *e.g.*, whereas 0.1 cc. of Shiga-Kruse filtrate was a lethal dose for a half-grown rabbit, 5 cc. of Flexner filtrate had little or no effect upon an animal of the same weight.

It is impossible here to enter into the subject of the immunisation of horses, &c., suffice it to say that after a fairly prolonged immunisation, either with the toxins from old alkaline broth cultures, or with the bodies of the young bacilli, the serum obtained from horses possesses antitoxic properties of a high order. The fact that bacilli from young cultures on agar were able to stimulate the animal body to the formation of antitoxin, and certain other considerations, led Todd to the conclusion that the toxin was of intracellular origin. In fact, this work on the dysentery toxin and antitoxin is one of the chief grounds which make it extremely difficult to maintain some of the older views as to the sharp line of demarcation between the toxins proper and the endotoxins.

The Properties of Dysentery Serum.—As already indicated, from the outset of the work on this subject it was recognised that the serum possessed bacteriolytic and agglutinating properties towards the homologous bacillus. A serum prepared with the Kruse bacillus appears to have not only specific, but also group bacteriolytic and agglutinins, which act on the Flexner type of bacillus, though to a much less extent than on the Kruse-Strong type employed in the immunisation.¹ As was shown by the writer, the opsonising action of the serum depends on the bacteriolytic property. From the point of view of therapeutics the antitoxic

¹ In the preparation of the Lister Institute serum, both types of bacilli are now employed.

property is probably the most important quality of dysentery serum. To illustrate the high antitoxic value which the dysentery serum may reach, it may be stated that Todd found that when the toxin and antitoxin were mixed some time before injection, $\frac{1}{1000}$ of a cc. of serum completely protected a rabbit against twenty certain lethal doses of toxin. The serum is also capable of protecting animals when injected apart from the toxin, and even when injected some time after the toxin, and more recently Kraus and Doerr have found that in certain cases, it is possible by large doses of serum to save the life of the rabbits after the onset of a paralysis which proves fatal to the control animals. From the experimental standpoint, therefore, this serum must be classed along with diphtheria, tetanus and botulismus antitoxins, no serum, with the exception of these, possessing toxin-neutralising properties of the same quantitative order.

The serum has now been used in a considerable number of cases in the human subject in addition to those to which reference has already been made. Rosenthal treated 157 cases with serum. During this epidemic the death-rate of cases treated by ordinary methods was 10-11 per cent., whereas the death-rate with serum treatment was only 4.5 per cent. The quantity of serum given varied from 20-40-60 cc., according to the severity of the case. This is the dosage now generally recommended.

In the Russo-Japanese war Korentchewsky employed Rosenthal's serum in 70 cases with good results.

Barikin treated 59 cases in Manchuria with only 1 death.

Vaillard and Dopter treated 96 cases, all of a severe type, with 1 death. They classify their cases as follows :—

	Cases	Deaths
Cases of moderate severity ..	50	0
Severe	18	0
Grave	24	0
Extremely grave	4	1

Several other writers, Birt, Lüdke and others, have treated small groups of cases with favourable results. Kraus and Doerr obtained permission from the Austrian War Ministry to employ the serum in the Austrian Army. They give a brief history of eight cases treated with the serum and refer to other groups of cases in various garrisons. It was impossible to obtain, in many of the outbreaks, reports suitable for statistical analysis, but in all cases the results obtained with the serum produced a favourable impression upon the clinicians. The pain and tenesmus were controlled as by a narcotic, the stools in many cases rapidly assumed a natural

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form, the general conditions were ameliorated, and the period of illness was much shortened.

To sum up, there appears to be a strong case for the use of anti-dysentery serum as a prophylactic and therapeutic agent. The employment of the serum without reference to the nature of the disease is to be deprecated, as it can only lead to disappointing and misleading results. In every case, or at least in every outbreak, it is essential to ascertain the causal agent at work, whether the disease is of an amoebic or bacillary type, and also in the latter case to determine, if possible, to which group the bacillus belongs.

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IS SIMPLE CONTINUED FEVER ENTERIC FEVER?

BY CAPTAIN L. W. HARRISON.

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LIEUTENANT-COLONEL BIRT, in his able article on typhoid and paratyphoid fevers in the *Journal* for August, 1907, expresses the opinion that cases of mild pyrexia which are frequently, for want of a better name, diagnosed simple continued fever are cases of mild enteric fever. I must confess to some difficulty in accepting this dictum, and for the following reasons maintain an open mind on the question.

In ten cases of continuous fever, varying in duration from four to ten days, and in which the diagnosis rested between enteric and simple continued fever, I have obtained a micro-organism from the blood in one only. The method used was the planting of 5 to 10 cc. of blood into 500 cc. of plain broth. Using the same method in nine cases of declared typhoid of normal or nearly normal duration, and in which the diagnosis was made by clinical signs, blood culture, Widal reaction, or all three, I obtained typhoid bacilli in six. The one case of the former series was one of what is known amongst Assistant Surgeons as "ten days' fever" and showed the signs and symptoms of mild enteric, but the temperature dropped to normal on the tenth day. The micro-organism isolated was proved by morphological cultural reactions (including the use of bile-salt-sugar media), and as tested by specific typhoid and paratyphoids A and B sera, to be the paratyphoid bacillus.

Quite possibly, by using the Conradi bile medium, which I now use, I might have obtained a greater proportion of positive results in the first-mentioned series of cases, but the difference between the proportions of successes to failures in the two series seems too marked to be accounted for by this. I have not had any cases of the type under discussion since commencing to use the Conradi medium, so cannot give any results.

In twenty cases of continuous fever of eight to ten days' duration, and in which the diagnosis rested between enteric and simple continued fever, I tested for a Widal reaction against typhoid and failed to obtain any reaction at all in eighteen. The remaining two gave a reaction of 1 in 20 in an hour as watched by the microscope.

I have often had the same men under my care for this disease

more than once, and the intervals between the attacks were much too long to be accounted for by their being just relapses from the first attack. Since commencing a routine of administering a dose of calomel followed by saline next day as a start off in such cases, I have had very many of this type.

I am quite aware that the above are insufficient reasons for declaring that simple continued fever is not enteric, or for basing any conclusions on, but as the material for the bacteriological work was furnished by British troops, I think they justify a doubt as to whether the question of simple continued fever has been settled as regards British troops, in the Punjab at any rate. Biffi and Galli and Perquis appear to have obtained more positive results, but quite possibly under different conditions, and I cannot see that the results of these observers settle the question as regards British troops serving in tropical and sub-tropical countries. In regard to simple continued fever, statistics must be fallacious, considering the very wide differences of opinion which prevail as to its nature: in my short experience I have known exactly the same type of case diagnosed simple continued fever, enteric, remittent, ague, hepatic congestion, according to the idiosyncrasy of the medical officer in charge. In the absence of more scientific diagnostic facilities, such differences could not be wondered at.

The question is an important one from many points of view, and I would name two reasons for our making an effort to settle this question. One is that if by any chance simple continued fever is not enteric and the dictum is accepted that it is, there will be a heavy balance against inoculation statistics. If inoculation is a real protection against enteric, it should be our object to show it in its true light and not to condemn it on insufficient evidence. Another reason is this, that the isolation to which a soldier is subjected when diagnosed enteric is irksome and lengthy, and, speaking from a personal point of view, I know that if I were a private soldier suffering from fever, and knew if it lasted a week it would be diagnosed enteric, I would do my best to avoid going sick to avoid the risk of the resulting isolation. This is my excuse for trespassing on your valuable space and for advancing this plea that the subject should be investigated on bacteriological lines.

I suggest that a competent medical officer, detailed in each of a few large stations providing plenty of material to investigate the question, would be able to throw a considerable amount of light on it, provided that the work of investigation were not "in addition to other duties."

ATOXYL IN THE TREATMENT OF SYPHILIS.

BY COLONEL F. J. LAMBKIN.

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DURING the last two years several authorities have advocated atoxyl in the treatment of syphilis, and it has been tried on the Continent with varying results. Thus whilst Salmon and Hellpeau speak in glowing terms of it as a specific, one come to take the place of mercury, Lessa states that during the last two years he has given the drug a very extensive trial, but found it very unsatisfactory as regards syphilis, and that many of the patients treated thus exhibited dangerous toxic symptoms. The following are the notes of four cases of syphilis treated by me with atoxyl at the Military Hospital, Rochester Row :—

(1) Private B. was admitted into hospital on September 18th, 1907, suffering from indurated chancre on the glans penis, inguinal and cervical adenitis, roseolar rash on the body; he also suffered from afternoon pyrexia and headache.

Treatment up to date.—No mercury. Atoxyl by intra-muscular injections every second day: up to date (October 18th, 1907) he has received a total of 96 grains.

Progress.—Body weight increased 8 lbs.; rash disappeared, induration at site of sore gone; general health much improved. No toxic symptoms.

(2) Private K., old case of two years' standing, the disease having been contracted before enlistment. Apparently has had little or no previous treatment.

Admitted September 20th, 1907, with the following conditions: deep ulceration of throat, mucous patches on tongue, condylomata, alopecia, general glandular adenitis, loss of flesh and cachexia.

Treatment.—No mercury; atoxyl given since admission every second day by intra-muscular injections.

Progress.—Body weight increased by 7 lbs. Ulceration of throat healed; mucous patches disappeared and condylomata vanished. General health much improved. No toxic symptoms.

(3) Private I., admitted September 21st, 1907, with an indurated sore on prepuce, ulceration of throat, papular eruption on back and arms, and general glandular enlargement.

Treatment.—Since date of admission has received an intra-muscular injection of atoxyl every second day. Has had a total of 90 grains. No mercury.

Progress.—Has gained 6 lbs. in weight. Ulceration of throat healed, induration of sore less. General health improved. No toxic symptoms.

(4) Private G., an old and very obstinate case, in spite of very efficient treatment. During the last eighteen months has received a total of 40 grains of metallic mercury by intra-muscular injection, besides full courses of pot. iodi. and iodipin, with hot air baths regularly. Mercury has been stopped for some months.

Treatment.—Since September 23rd, 1907, the patient has been on atoxyl given in the manner described below, and up to date (October 18th, 1907), he has had a total of 115 grains of atoxyl.

Progress.—Although the patient has gained weight steadily, the treatment has not been otherwise satisfactory, some old scars of tubercular syphilis on the scalp, chest and back having broken out afresh. No toxic symptoms.

Procedure adopted.—The injections were given intra-muscularly into the buttock with the usual precautions.

Dosage.—In the first three cases 6 grains of atoxyl in 15 per cent. solution were given every second day. In the fourth, as recommended by P. Salmon, two injections of 0·75 cgr. at two days interval were given and 0·50 cgr. every second day.

Precautions.—The solution must be freshly made when required for use, and should be sterilised and slightly heated. Atoxyl should never be given at the same time as mercury, an interval of at least fourteen days being allowed to elapse between the time mercury has been stopped and atoxyl begun.

Remarks.—No definite conclusion can be arrived at as to the utility or otherwise of atoxyl in the treatment of syphilis from the above cases, as they have been under treatment for too short a time to warrant this; however, the progress made so far by three of these cases is encouraging, and further experience may show atoxyl to be as useful as is claimed. Two things will be noticed in connection with these cases, *i.e.*, that they all gained weight in a remarkable manner and that not one of them showed any toxic effects of the drug, although it was given in far larger doses than has hitherto been the case.

A CRITICISM OF SCHEMES AND A NEW SCHEME FOR THE DENTAL TREATMENT OF BRITISH TROOPS IN INDIA.

BY CAPTAIN S. C. BOWLE.
Royal Army Medical Corps.

FOR some years past the strength of the Army has been appreciably weakened owing to the increasing number of soldiers who have become inefficient owing to bad teeth. Bad teeth have become, owing to many insidious reasons, a very considerable obstacle to the soldier's efficiency, and a recognised cause of invaliding from the Service. And, as the consideration of the question has given rise in the medical mind to difficulties of so intricate a nature and so various a description, so the interest evinced in its ultimate settlement must have become correspondingly intensified. Many attempts have been made to formulate a scheme whereby the cause of this inefficiency might be checked. Hitherto, owing to the imperfection of these attempts, no good results have been achieved, and I have been unable to discover amongst them any scheme which is likely, at all perfectly, to meet the requirements of the case.

The only practical attempt at combating the difficulties that have presented themselves consists in the universal extraction of decayed teeth, combined, when considered necessary by a Medical Board, with the supply of artificial substitutes. This attempt having now been thought unsatisfactory, the whole matter has arrived at the present time at an unprofitable deadlock, and conflicting opinions are heard on every side. Thus, soldiers are everywhere to be seen whose teeth present every stage of decay, and whose remnants of teeth render them entirely inefficient for active service.

At the present time large numbers of soldiers have been supplied with false teeth, and about 80 per cent. of the remainder are rapidly qualifying for false teeth. Soldiers have come to feel that they have a right to be supplied with false teeth, and this feeling is fostered by people in the highest positions, and presumably by public opinion generally. It is understood that those soldiers who have lost their teeth in the service of their country have an undisputable right to be supplied with artificial substitutes at State cost, and it is, indeed, only natural that when the unfortunate soldier has had all his teeth pulled out, he should look to his country to supply him with false ones. If a man loses his leg in the service of his country, it is only fair to advocate that he should be

supplied, at public expense, with a false one. The principle underlying such humane advocacy has now come to be applied to a soldier who has lost his teeth. But there is a most important difference between the two cases, namely, that whereas every effort is made to save a soldier's limb from amputation, no attempt has ever been made to save teeth from extraction.

The present scheme of treatment, then, may be called the "Forceps and Denture Scheme." It is for those in authority to judge as to whether the State, or humanity, has benefited in proportion to the amount of money spent on the large number of artificial dentures which have been supplied, as to whether the good results of these dentures are likely to be permanent, and whether these dentures have rendered their possessors efficient for active service. The military authorities may be satisfied with present results, public opinion, as represented by the casual observer, may be satisfied, the patients themselves may be satisfied, and the dentists may be satisfied, but no one who has any practical knowledge of dental surgery, who knows Service conditions and who is working on behalf of the Government, can allow the present forceps and denture scheme to continue. This scheme is of a barbarous and antiquated nature, it is based on unsound surgical principles, and no good can ever come of it. The principle underlying it is the same as that which would be acted upon by a surgeon whose only idea of the surgery of a diseased limb was to amputate it and supply an artificial substitute.

The practice of allowing teeth to decay till it becomes necessary to pull them out, provokes hostile criticism, which is inevitable as a result of the tendencies of present-day teaching. However, from whatever point of view this practice be regarded, it must be clearly understood that the resulting false teeth can never be looked upon as a necessity for soldiers. False teeth must always be looked upon as a luxury to be enjoyed only by the rich. Whatever the amount of benefit said to be derived by a patient happy in the possession of a couple of sets of perfectly made and perfectly fitting dentures, such benefit can only be regarded as one of the numerous blessings afforded to the rich. Again, even the most satisfactory and perfect false teeth must be considered, in almost every case, merely as an expensive though more or less satisfactory result of the neglect of the natural teeth. Also such gratification is nearly always produced as much from reasons of vanity as from reasons of health, although naturally, perhaps, the health reasons are liable to be particularly extolled by the dentists. But be this

as it may, it is extremely doubtful if many people are inclined to pay thirty guineas for a set of false teeth, none of whose part it is to enhance the appearance. People have always done well without false teeth if they cannot afford them. Forty years ago or so the skilful dentist did not exist. People then managed to attain a satisfactory age in serviceable condition without any dental treatment whatever, except perhaps that which was meted out to them by the village blacksmith. Therefore the expenditure of a large amount of public money on such questionable luxuries as artificial dentures, which have only become necessary through sheer neglect of the teeth, cannot longer be countenanced.

This scheme is fraught with expense and bad results, and if it is persevered with, will be found to breed abuses of every variety, and will also be likely to develop a state of affairs for which the term "laughing-stock" will be all too mild a description. The Government should not be induced to undertake the supply of artificial teeth on any pretext whatever.

The cause of the universal decay of the teeth is still unknown. No constitutional treatment has ever been shown to prevent or ameliorate the condition. But it is well known that the ravages of dental caries can be effectually stopped by means of conservative surgical methods, and the time has now fully come when the preservation of soldiers' teeth should no longer be wholly neglected.

Neglect of the teeth not only results, primarily, in an enormous amount of dental inefficiency, but also results, secondarily, in many forms of retrogression from good health. What sanitary expert can look upon his efforts with satisfaction when he regards the septic mouth of the soldier? Every disease is probably aggravated by bad teeth. It is true that there is no proof that any disease (except of the jaws) is caused by decayed and suppurating teeth, but there is nothing to prove that any disease is not either primarily caused by teeth, aggravated by them, or secondarily caused by lowering resistance. Present-day ideas of infection cannot exclude diseased teeth from the cause of any infection, the mode of entry of which is unknown. Moreover, one may go so far as to say that there exists hardly any pathological condition whatever in which either the patient himself, or his treatment, can be considered to be getting a fair chance, if the consideration and treatment of the state of his teeth should be lost sight of. Therefore conservative surgical treatment of teeth is urgently and essentially necessary for the Army, as a most important factor in the prevention of disease and of invaliding. By its introduction, dental inefficiency will become a thing of the

past, the health of the Army will benefit in many ways, and forceps and false teeth will be consigned to a well-merited oblivion.

But while Army surgeons and the medical profession generally will undoubtedly agree with the motives and principles here expressed, yet they will also undoubtedly ask who can be found to accomplish the requisite work. The training of the Army surgeon does not include conservative dentistry in any form, and therefore it would appear that the only course to take would be to employ a corps of Army dentists, to which suggestion there are many objections, some of which I will now proceed to discuss.

Now a first-rate dentist—and none others are any good—is a man of many arts. He is acquainted with highly specialised dentistry of every description. He can manufacture dentures of gold, silver or vulcanite. He is proficient in the use of porcelain. He can produce bridge and crown work of great variety. He can fill cavities in teeth with gold, porcelain, amalgams or cement. He can, by means of ingenious mechanical contrivances, regulate the position of misplaced teeth. In fact, his work abounds in technical skill of the highest order and of the greatest variety.

But I have endeavoured to show above that denture work of any kind should not be encouraged, and is, in fact, useless for the Army. To go further, it may now be stated that bridge, crown, gold, silver and enamel work, in fact, almost all the results of the high professional training of the dentist, are equally useless. Nearly all such ability and skill in treating soldiers' teeth would be entirely thrown away, whether considered from the point of view of humanity or of benefit to the State.

Again, if it is considered that dentists must be employed, it will be found that they must be highly paid for their services. They would require so much pay, that in comparison the Royal Army Medical Corps officers would be "nowhere." A scheme was mooted which suggested that four English qualified dentists, one for each Command, would be sufficient to perform the dental work of the Army in India. It was suggested that each of these dentists, besides other duties, was to put the teeth of every British soldier in the Command, as far as practicable, into good order by examining them, and treating them if necessary, at least once yearly. Now there are about eighteen thousand soldiers in each Command. The dentist would therefore be required to inspect, and treat, if necessary, about fifty patients a day. And out of this number about forty would be likely to require treatment. Irrespective of many minor impracticable details, the amount of work indicated above, if

honestly attempted, is to be regarded as being absolutely beyond the power of any one man to perform. Roughly speaking, it would be found that twenty dentists for each Command would find their time well employed in such an enormous field of labour.

It was suggested, moreover, by this scheme that these dentists should work as civilians. Now, in the Army, the doctor is an officer of rank, and it is to be noted that in England the time is rapidly coming, if it has not already come, when any question of the difference of professional or social status between a doctor and a dentist will not be admitted. The dental profession has of late years made large advances in every direction. Every year sees the professional education of the dentist more nearly approaching that of the doctor. At the present time the preliminary education in arts, in anatomy, physiology, biology and chemistry is, I believe, exactly similar to that required of the doctor. The dental student even goes further, and is instructed in metallurgy and comparative anatomy. At a later stage their respective educational paths diverge, the medical student enters the wards of a general hospital and the dental student proceeds to his special work. But during this stage the dental student must attend lectures on general medicine and surgery, and he must further pay visits to the medical and surgical wards of a general hospital in order that he may be able to answer questions on those subjects which form a part of his final examination; whereas, it may here be noted, the doctor knows nothing of dentistry whatever, and no provision is made, at any rate compulsorily, for his instruction in that subject. Further, the closer alliance of the two professions has been one of the chief objects which the leaders of the dental profession have had in view for several years past. It is to be hoped that at some not too far distant date, the dental profession will become absorbed in the medical profession, and that every dentist, or tooth specialist, will be educated as a doctor in the same manner, for instance, as every eye specialist is. Therefore, it will be seen that there are strong reasons for maintaining that the stipulation, that the dentist should be employed in the Army as a civilian, would not be a popular one; and that it would not only not be productive of good feeling between members of the two professions, but also would be a retrograde movement to the advancement of the dentist, which would almost certainly ultimately end in trouble. This question is of more importance than might at first be supposed, and is worthy of the closest consideration. It is impossible for us to have working among us people who are neither of us nor subordinate to us;

people who would be completely out of our hands, with none to check them; people who would be likely to weaken our strength and imperil our unity.

Another scheme suggested that medical men should be recruited for the Royal Army Medical Corps who are possessed of the Diploma in Dentistry. It was proposed to give such officers a small increase of pay that they might perform the dental work of the Army, but such a medical man, did he desire to practice as a dentist, would certainly remain in civil life, where his qualifications are of first-rate market value. Again, the conjoint medical, surgical and dental course of education is of the most expensive variety that can be undertaken. Such an education costs as much or even more than a medical degree taken at Oxford or Cambridge University. The supply of these doubly-qualified recruits, then, is likely to be of an extremely limited nature, and as there are no adequate inducements held out to them, it is to be implied that their presence in the Army is purely a matter of chance, and that a constant supply of them is by no means to be relied upon. Any scheme, then, for the employment of qualified dentists would be unworkable, and, above all, qualified dentists are not really required.

Another scheme suggested the inducement of officers of the Royal Army Medical Corps to undergo a course of training in dentistry, in order to become "Dental Specialists." This scheme would also prove unworkable. No officer could possibly be expected to give up his medical work for the purpose of taking up dentistry among soldiers, when the only proposed advantage to accrue to him by such an undertaking was to consist of an addition of half-a-crown a day to his pay.

Yet another scheme suggested the training and employment of Assistant-Surgeons as dentists. This scheme has been much advocated, and is thought by many officers of experience to be a satisfactory method of meeting the case. The unsatisfactoriness, however, of the scheme as it stands, lies in the fact that the work done by the Assistant-Surgeons could neither be satisfactorily supervised, nor satisfactorily checked. Although Assistant-Surgeons are a hardworking and useful body of men, and although they would undoubtedly be able to learn the work, and satisfactorily perform it, yet if careless work were done its bad results would not be observed till an indefinite time afterwards; and the checking of such work by its inevitably bad results—and there would certainly be no other manner of checking it—would not be a satisfactory method by which to proceed. Reliability must be insisted upon.

It would be very disheartening to run such a scheme for, say, a couple of years, and then to find the results unsatisfactory merely owing to second-rate work being done—unchecked—by the operators.

It is important to note that the amalgam filling—which should be universally used in the Army, being easily worked, and producing absolutely permanent results if introduced over a perfectly clean surface—depends for its success not so much on training and skill as on sheer honesty of purpose and desire for good work on the part of the operator. Such fillings cannot be successful, if during the excavating of the carious cavity the operator becomes overtaken by the lassitude of the East and puts in the filling over an imperfectly cleaned surface. It may be argued, however, that all cavities after being cleaned, should be inspected by an officer of the Royal Army Medical Corps—who, by the way, would certainly be held responsible for the results of all such work—before the filling is inserted. But it should be obvious that such an officer cannot be regarded as a satisfactory judge of such a matter. He has had no training in such work; and as there are so many dental questions involved in such an opinion, or in any such opinions, it follows that his ideas on the subject would be quite valueless; and to go further, it should be clear that he would also be quite at the mercy of his subordinates in this matter—a state of affairs to be regarded with the utmost dissatisfaction. Therefore unchecked and unsupervised work, while at first wearing a satisfactory appearance, would, sooner or later, lead to the discomfiture of everybody concerned, and to the ultimate certain downfall of the whole scheme. But Assistant-Surgeons would be able to accomplish the requisite work with entire satisfaction, provided that it be done under the trained supervision of Royal Army Medical Corps officers.

The postulate that all future officers of the Royal Army Medical Corps must be in possession of the practical knowledge of dental surgery necessary to the well-being of the Army, forms the fundamental and only sound basis on which local schemes for Army dentistry can be formed. The surgery of the teeth is as much the Army surgeon's work as the surgery of the eyes, or, indeed, any other branch of surgery.

The two chief ends to which dental treatment should be employed are as follows: (a) that every soldier's mouth should be maintained in a hygienic condition, by cleaning, "stopping," or removing bad teeth; (b) that every soldier's "bite" should be preserved to him by the conservation of two or more grinding teeth which "meet." For the practical attainment of these ends

no very extensive knowledge of dentistry is required. All the operations and treatment necessary can be successfully learned during a very short course of training.

The scheme of dental treatment for soldiers in India, which will now be put forward, is based on the assumption that all future Royal Army Medical Corps officers, besides possessing a practical working knowledge of all the ordinary special subjects of the practice of medicine and surgery, should also possess a practical working knowledge of simple dentistry. In civil life it may be thought desirable, from what may be called commercial reasons, to keep the two professions of medicine and dentistry as strictly apart as possible. But in the interests of the Army, and also, it may be said, in the interests of the individual generally, a hard and fast line of demarcation is not desirable.

It is suggested that, on the assumption above indicated, the Royal Army Medical Corps officer would be able, if called upon to do so, to himself perform such dental work as may be required; and also he would be in a position to superintend the work of the Assistant-Surgeons, by whom it is suggested that the actual operating work should ordinarily be accomplished.

For the working of this scheme it is necessary that both the Royal Army Medical Corps officer and the Assistant-Surgeon should receive a course of instruction in simple dentistry at their respective educational centres.

With regard to the instruction to be provided for future Royal Army Medical Corps officers, it is suggested that it should take place at the Royal Army Medical College, in London, during the post-commissioned course. The time necessary for this course need not of necessity be prolonged. Instruction in dental surgery might take place at the expense of some of the courses now in vogue. All the knowledge required could be embodied in a few lectures on dental surgery and anatomy, and in a short, practical course, consisting of the preparation and filling of a dozen or so carious teeth, recruits making suitable patients for such work. The Assistant-Surgeons should also be instructed during the period of their training in a similar but somewhat fuller course.

The practical working of this scheme should take place somewhat as follows: The soldier who comes under notice for dental treatment should be carefully examined with regard to the general state of his teeth by an officer of the Royal Army Medical Corps. Supposing that the soldier is considered to be a proper subject for dental treatment—the inspecting officer should note the exact condition of the teeth in detail on a dental chart, a copy of the one

I am at present using being appended to this article. Then, bearing in mind various dental questions, as well as the chief points to be attained, namely, the hygienic condition of the mouth, and the preservation of the "bite," this officer should proceed to instruct an Assistant-Surgeon as to the work that is to be performed. The Assistant-Surgeon should then take over the case; and carry out the work that has been decided upon. During the course of this work, the satisfactory cleaning of a dental cavity, when accomplished, should be inspected and signed for by an officer. At the conclusion of the work the condition of the teeth should again be inspected and signed for by an officer. The fillings, &c., accomplished should be recorded on the dental chart. This dental chart should be used as a record for statistical purposes. By its use, statistics of a unique and most valuable nature will be obtained.

Objections as to the practical working of such a system are certain to be put forward, but the system here indicated is founded on, and almost exactly resembles, that in use at the Dental School at Guy's Hospital, and after most careful consideration, there can be very little doubt that it would be eminently workable.

I venture to think this system would be popular among Assistant-Surgeons, who would thereby be in a position to increase their emoluments by private practice, and would not be altogether unpopular with officers.

The expense involved by this scheme would be embodied in the following provisions:—

The course of instruction in London for Royal Army Medical Corps officers; the course of instruction in Calcutta, Madras, or Bombay for Assistant-Surgeons; the supply of a suitable dental chair, instrument-cabinet and table; a dental engine, and the appertaining accessories, instruments and materials. The whole of this outfit should eventually be found to form a part of the equipment of every Station Hospital. It may here be noted that such dental outfits should never be required to accompany troops in the field, otherwise many abuses and much trouble would be likely to arise. Teeth should be put in as good order as possible in times of peace only.

A recruit who presents himself for enlistment who has no "bite" should be rejected. The idea that such a man should be considered satisfactory if he should provide himself with false teeth, is open to such numberless objections that it is not worth considering.

It may be asked how this scheme of dental treatment would fit in with schemes at present on trial, or schemes which may ultimately

be put into practice in England or elsewhere. It is beyond my present purpose, however, to discuss the question as it concerns any country other than India; but, in conclusion, I wish to express my firm belief that the only universal basis on which satisfactory results can be attained, is to be found in the assumption that every Royal Army Medical Corps officer, as far as possible, must be compulsorily trained in simple dentistry. So shall a true and permanent step forward be the certain result; and so shall all forms of unsatisfactoriness, dependent on the lack of this indispensable knowledge, be relegated to an obliging and easily forgotten past.

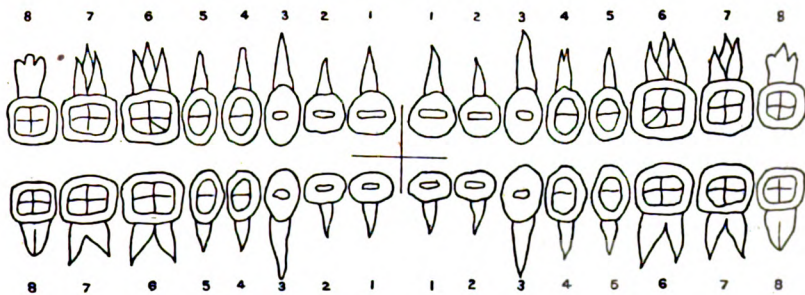
DENTAL CHART OF

Surname..... Christian Name..... Age.....

Date of Enlistment.....

Unit..... Regtl. No..... Rank.....

Date of being placed on this Chart.....



The state of the teeth on being placed on this Chart to be shewn in Red Ink, thus —

○ Existing cavity.

● Previous filling.

A line to be drawn round any tooth or part of a tooth which is missing.

Subsequent work and conditions to be shewn in Black ink, thus—

○ Cavity.

● Filling.

⦿ Crown and root filling.

† Tooth or part of a Tooth extracted.

Station	Date	Operations	Remarks

A LITTLE HUMOUR FROM THE MALTA FEVER COMMISSION.

BY CAPTAIN J. CRAWFORD KENNEDY.
Royal Army Medical Corps.

I FEEL that the title of this communication needs an explanation and perhaps an apology to the author of "The Humour of Indian Sanitation"; but it will be observed that my intention is honest. Hints have been dropped from more than one quarter that the Reports of the Mediterranean Fever Commission were too deeply scientific to appear as full reprints in our Journal. It has therefore occurred to me that I could supply some little bits of humour which might, to some extent, counterbalance the depressing effect which these reprints appear to have had.

The origin of Malta fever has been the subject of many theories, but one of the weirdest is propounded in the following letter to the *Daily Malta Chronicle* of October 21st, 1903.

"MEDITERRANEAN FEVER.

"SIR,—From the number of deaths which are attributable to the well-known Mediterranean fever from day to day, it is apparent that the disease still baffles the skill of the medical profession.

"As patients afflicted with this dreadful scourge are found to regain their health most speedily when transferred to a different region of the Earth, and as the complaint seems to originate in places adjacent to the Sea, the cause of the trouble may reasonably be attributed, I think, to the intensely bluish sheen of this fine sheet of water, and the corresponding colour of the atmosphere. This idea is not so far-fetched if it is borne in mind that the blue rays of sunlight are now known to have a most injurious effect in such diseases as small-pox. It would, however, be easy to test if there is anything in this idea, by giving a few of the fever patients a chance of recovery in a ward where the light would reach them only as filtered through glass of the colour used by photographers in their dark room lamps, say. Of course, if this peculiar fever has been known to attack blind people, then the cause must be sought for on other lines.

"My theory is that Mediterranean fever originates in a disorder of the optic nerves, caused by the superabundance of intensely blue light, accompanied by the peculiar glistening effects of the water, which effects are like occasional small currents of bright electrical fluid confusing and dimming the eyesight. This effect is most

troublesome when the system is weakened generally, or after a bout of unusual exertion.

"Malta,

"METEOR.

"October 20th, 1903."

If a Maltese be asked the cause of the fever, the chances are that he will loudly accuse the drainage system. Drainage and water supply waste money, and his old plan was much more comfortable, viz., cesspits and wells. These cesspits were hewn out of the soft porous rock of which Malta is almost entirely composed, and were usually situated underneath one of the living rooms. As the rock is so porous the fluid part of the sewage soaked away and a modification of the septic tank process was the result. These cesspits would perform their function for years and years without being emptied. When the sanitary authorities ordained that all new cesspits should be lined with cement they had to take precautions to prevent the energetic householder descending with a pick to crack the cement, so devoted was he to his "self-emptying" (and economical) cesspit.

It is now common property that the goat is at the bottom of most of the fever. Under the very close attention paid to the goats by the investigators the owners of the goats became restive and rebelled, and finally went on strike. They forewarned the public by issuing a Proclamation headed

"No more milk!

We can't bear it any more!!

We can't do any more!!!"

and signed, "The Vexed Maltese Milkman."

As this wonderful Proclamation was reprinted in full in the Corps News of July, 1906, under "Notes from Malta," I need not repeat it; but the apostrophe of the goat is quite a unique thing in the way of a public Proclamation: "Poor Maltese Goat! What a war has been waged against her! How she has been humbled all over the world as a filthy and poisonous animal! . . ."

The following extract from a letter sent to me by one of the goatherds shows how bitter was the feeling at the time of the milkman's strike. The humour of this letter is in its "English as she is wrote."

Extract from Letter.

"SIR,—I beg you to pardon me the liberty I taken to writing you this letter.

"SIR,—I have to inform you that the Milk Sellers has recovered that time ago I furnished you with Goat's blood and milk for the use of Medical Experiments, so it is impossible to continue selling

milk as they are all against me, and I am insulted wherever I go, beside this, I also have to spend a sum that I am not able to spend it, regards the new 'Sanitary Regulations,' not if I sell all my goats will be enough to comply with these orders.

"An answer (if possible) will obliged,

"I will remain, Sir, &c."

Of course the milkmen have suffered greatly and it is very hard on them, and legislation is needed for compensation to owners for destruction or quarantine of infected animals. But until the great mass of the people is educated up to the hard facts, and persuaded out of the idea that what was good enough for their forefathers is good enough for them, the Government will hardly see its way to initiate the much needed reforms.

Not only did the members of the Commission incur the hostility of the milkmen, but they were also the subject of scathing criticism in the local papers. The following is a copy of a letter which appeared in *The Malta*. The italics are my own. Comment is needless.

"VALLETTA,

"November 5th, 1906.

"DEAR MR. EDITOR,—In an article which appeared in the servile *Daily Malta Chronicle* (which has not even a shred of self-respect, as can easily be seen by the expressions interpolated in the same article on Malta Fever), the incompetence and levity of this ill-omened Commission has been shown—this Commission which according to the *British Medical Journal* leaves much to be desired both as regards experiments, scientific knowledge on the subject, and logical deductions.

"In fact, on reading that article it is clear that the Commission seem to ignore the fact—known even to the most stupid school boy—that the mere presence of the *Micrococcus melitensis* of Carnana Scicluna-Bruce (*sic*) in our goats' milk does not demonstrate in the least that such milk is the source of infection of the fever, which is not Maltese—*vide* the treatises of the most renowned Italian and French authors, who are the most competent. One must not run away with the idea that every microbe which finds its way into the digestive organs succeeds in infecting our miserable selves; in such a case there would not be a single man living; besides, are we not aware of the fact, expressed by all the Medical Congresses of the civilised world, that, although *the cow's milk overflows with tubercle bacilli*, the same is not a means of infection, for the reason that the bacilli are destroyed in the digestive organs and but very rarely

multiply there. In face of all these facts, well known even to those who do not belong to the medical profession, is it fair and honest on the part of *this most incompetent Commission* to declare that our goats are a source of infection, especially as ——— has declared that such infection is but rare? Is it fair to support this calumny which has caused considerable damage to our commerce with other countries far and near, by two feeble cases of very doubtful infection.

“Have not the people who are receiving such an amount of our money, which is thus being exhausted, have they no common sense? Are they not ashamed to write such ridiculous reports which show their *crude ignorance of the rudiments of bacteriology*? Do they not know that in order that an experiment shall be conclusive it must be absolute—that is to say: in order to declare that a monkey has been infected through the ingestion of milk, it is necessary that other sources of infection shall be absolutely eliminated, that the air breathed by the animal be pure, that it shall not be under the influence of other inoculations, &c.

“Why do not these bacteriologists go back to their homes and suggest to their consumptive countrymen not to drink the milk of English cows, because . . . such milk contains the bacillus of Koch?

“Why is it permitted to these people to alarm honest folk whose health has been broken by a *system of drainage introduced by their countrymen in spite of the remonstrances of the whole of the Maltese population*?

“Why, instead of *inventing Maltese fevers*, do they not suggest to their countrymen not to overtire themselves under the scorching rays of the sun for hours and hours playing the savage game called Rugby? and, immediately after, dipping in ice cold water, or drinking whisky that would burn even a stomach made of marble? These are the suggestions they should make, and not recommend us to spoil milk by boiling, which, while destroying the germs in the milk, destroys also the better qualities of our milk which has always invigorated our forefathers and our children.

“*Oh, these people! they know not what is chemistry, nor what is bacteriology.*”

Is it not a wonder that the members of the Commission, after such an indictment being hurled at them, can show their faces for shame of the exposure!

This is criticism with a vengeance and quite unanswerable. But what is one to do when confronted with a criticism of a higher

order! A certain learned Theologian, writing to the *Expository Times*, gives an example of the Higher Criticism as applied to the much vexed question of Paul's thorn in the flesh, and comes to the conclusion that the Apostle must have suffered from Malta fever.

He arranges the Scriptural evidences and the clinical symptoms of the disease in parallel columns, one against the other. Thus:—

PAUL'S INFIRMITY.	MALTA FEVER.
A stake for the flesh.	Headache, pain in joints and muscles.
Charge of fickleness.	Temporary impairment of memory.
Called a madman.	Nocturnal delirium.
Buffeting of Satan's angels.	Rheumatic-like pains and neuralgia.
Excitement of contempt and loathing.	Crippling and skin eruptions.
Constant impalement and buffeting.	Chronic pains, neuralgia, and debility.
Sentence of death in himself.	Occasional endocarditis or pneumonia.

What do our clinicians say to that for a diagnosis! I am afraid that a mere bacteriologist is not of much assistance in this case. Perhaps some of our specialists in psychology will assist; they would appear to be better able to follow the mental gymnastics of this Higher Criticism.

This communication is now longer than I had intended it to be, and I shall straightway conclude by giving extracts from a letter sent to me by the adjutant of a regiment, in reply to a request that the men be asked to collect mosquitoes and forward them to me in boxes. The men did their duty nobly, and supplied us with more specimens than we could comfortably deal with, but they evidently got good value out of the game. I am afraid that we got a very poor share of the fun—as there is little humour to be derived from the dissection of some hundreds of mosquitoes.

Extract from Letter.

“Fort —, Malta,
—, 1905.

“DEAR KENNEDY,—P. has passed your note on to me, and all our men are now running about with butterfly nets, or trying to tempt the wily mosquito with lumps of raw meat, and I've indented for a small size of mouse trap, but am doubtful if the Government will supply the necessary bait. Up to the present the bag is one, and he struggled so when our Regimental Police were effecting his capture that he had to be hit hard on the head and I'm afraid is almost unrecognisable.

“P.S.—Another capture just reported—we've put him in the guard room till your boxes arrive. He has been biting — — and was consequently drunk and his capture was easy. Ought mosquitoes (when drunk) to have their boots removed?”

Clinical and other Notes.

REPORT ON A CASE OF GENERAL PERITONITIS FOLLOWING AN OPERATION FOR REMOVAL OF APPENDIX, IN WHICH SUBCUTANEOUS INJECTION OF SALINE SOLUTION WAS USED WITH MUCH BENEFIT.

BY MAJOR F. J. W. PORTER, D.S.O.
Royal Army Medical Corps.

PRIVATE B., 8th Hussars, was admitted on April 9th, 1907, to the Military Hospital, Colchester, with the following history: Nineteen months ago, while walking about, he felt a sudden pain in the right iliac region. It was very severe, and he had to go home and sit down. The pain kept him awake all night and, although it had gone by the morning, it left him a bit sore for a couple of days. Since then he has had "stitches in his side" if he ran. The next attack was seven days ago. While riding, at 9 a.m., he was suddenly seized with pain in the right iliac region and had to dismount. The pain lasted till 10 p.m., and then disappeared. While trotting next morning he got sudden stitches of pain, which disappeared after a short rest. This condition recurred every day on riding, and so he reported sick. Temperature normal. Bowels open. Located tenderness, with one finger, accurately over McBurney's point.

On April 16th, 1907, under eucaïne and adrenalin, the usual operation was performed. The cæcum was found to be much tied down, and the appendix (which could be felt running up along the outside of the ascending colon) could not be withdrawn. Under chloroform the muscle fibres were divided in an upward direction. The appendix was found buried in dense adhesions, and was removed with difficulty. It contained three concretions and its mucous membrane was much ulcerated. There was a good deal of vomiting after the operation, which was ascribed to the anæsthetic.

On April 19th, 1907, it was noted that there was a good deal of local peritonitis, and the bowels had not been moved, although purgatives had been repeatedly given. The wound looked inflamed and smelt. Temperature 99·8° F. Enema of terebinth acted freely, and it was thought that the vomiting would now cease and that he would do well.

April 20th, 1907. He had acute abdominal pain last night. This morning there is general peritonitis. Pulse 138, of very small volume; face pinched; persistent vomiting of dark fluid. Those who saw him expected a fatal termination in a few hours. He was given 5 minims of strychnine hypodermically, and it was repeated twice at intervals of an hour. His rectum was washed out and rectal feeding commenced. Subcutaneous

injection of normal saline solution into the tissues over the pectoral muscle was begun. At first it was run in by means of a hollow needle (from an aspirator case) connected by rubber tubing to an irrigator can. This was slow and not altogether satisfactory, so I subsequently used the needle of a large antitoxin syringe. This was pushed into the axilla, vertically, close to the anterior fold, and the solution injected as fast as the syringe could be detached and filled. It was found that only the first syringeful was painful. One and a-half pints could be injected in about fifteen minutes. Up to 9 p.m. eight and a-half pints of saline had been injected, alternate axilla being used. The pinched appearance had disappeared and he did not complain of thirst.

April 21st, 1907. Hyoscine gr. $\frac{1}{50}$, digitalis gr. $\frac{1}{100}$, given at 9.30 last night. It made him rather delirious. Repeated at 2 a.m., and he slept. His pulse dropped steadily and is 108 this morning, of good volume and tension. Intense infection of wound, and black slough of connective tissue separating. Abdomen is less distended and flatus is passed. Stomach washed out by large tube; large quantity of dark fluid and much gas escaping. He appears to have acute dilatation of the stomach. Four and a-half pints of saline given subcutaneously to-day; vomiting much less.

April 22nd, 1907. Hyoscine gr. $\frac{1}{100}$, and morphia \mathfrak{miii} , given at 6 p.m. yesterday and repeated at 9.30 p.m. He had a good night. No more vomiting. Stomach still much distended. Had several stools during the night and passed a lot of flatus. Rectal feeding stopped, and feeding by mouth in small quantities commenced. Saline solution, one and a-half pints, given subcutaneously. About 1.30 p.m. it was obvious that all the fluid which was being given by mouth was being retained in the stomach, which was unable either to absorb or reject its contents. Stomach tube removed a large quantity of dark brown fluid, a very much larger amount than had been drunk. About 5 p.m. the abdominal pain (chiefly over the stomach) became very acute, and a hypodermic of morphia \mathfrak{mv} given. At 9 p.m. I washed his stomach out again with saline solution and injected two pints, with 1 ounce of brandy in it, subcutaneously. Half an ounce bovine, diluted to 4 ounces, ordered as enema every six hours. All fluid by mouth stopped.

April 23rd, 1907. Hyoscine gr. $\frac{1}{100}$, repeated during the night, which, with the addition of morphia \mathfrak{miii} hypodermically, gave him a good sleep. Stomach washed out. It contained much less fluid, and it was not quite so coloured. Its distension appeared less. Pulse remains as good as it was three days ago. Liq. strych. \mathfrak{mv} hypodermically, given from 9 p.m. last night and continued till 9 p.m. to-day, every four hours, with the idea of getting the intestinal walls to contract. Saline solution five pints, with $\frac{1}{2}$ ounce of brandy in each pint, given during the day. No thirst. Flatus freely discharged. Wound much cleaner.

April 24th, 1907. Temperature 99° F. Pulse 96. Abdomen much

softer. No apparent accumulation in stomach. Bowels open. Rectal feeding and saline injections stopped, and whey ordered by mouth.

From this date food by mouth was gradually increased. The wound on May 7th, 1907, was quite clean and had gaped to such an extent that the edges were about $2\frac{1}{2}$ inches apart at the centre. Three stout silk-worm gut sutures drew them together, and union of granulating surfaces resulted.

He went on sick furlough on May 30th, 1907.

Remarks.—The history of the patient's symptoms was the usual one obtainable in these cases of chronic appendicitis due to concretion and ulceration, and the man required no urging to get him to submit to operation. He fully realised his inability to go on doing his duty with chronic discomfort in his iliac region.

The operation was a clean one. The peritoneal surface of the appendix (to the naked eye) appeared normal. I can only account for the intense infection of the wound by supposing that some virulent germs had found their way from the ulcerated mucous membrane through the coats of the appendix, and were lying on its peritoneal surface. The organ was completely enclosed in a canal formed by tough adhesions. When this was stripped up these germs were set free and infected the wound. Mr. C. B. Lockwood, in his book on "Appendicitis," has called attention to the possibility of this.

Several officers who saw this case urged me to open him in the middle line and wash him out, stating that they considered it was his only chance. I did not act on their advice, for this reason: the appendix lay on the outer side of the ascending colon and cæcum. I felt that within a few hours the infected area must have been shut off towards the right flank by adhesions, and as there had been no manipulation of parts towards the middle line, I failed to see how infection could possibly have spread in that direction.

The want of a reliable hypnotic which can be given subcutaneously in cases such as this, where morphia is positively dangerous, was very forcibly impressed upon my mind. Hyoscine acted fairly well, when assisted by a minute dose of morphia. A purgative which can also be given subcutaneously would be of immense value.

Post-operative dilatation of the stomach undoubtedly existed in this case. The symptoms came on insidiously, and were at first attributed to anæsthetic vomiting. The bulk of the pain was referred to the epigastrium, and the vomiting was constant and without effort. The outline of the distended stomach was very marked, and reached some distance below the umbilicus, and the bulk of the distension was due to gas.

From the character of the vomit, I had no doubt that post-operative hæmatemesis also existed, but not to a very marked extent. By some this is considered to be a symptom of toxæmia. The fact that it did not make its appearance until the fourth day after the operation, when sepsis

had become evident, and that it rapidly improved after a large quantity of saline solution had been injected, seems to support this view.

I have no doubt that this man was saved by the free injection of saline solution, acting by washing the toxins out of his body through the kidneys. The amount which could be given, and the ease with which it could be got into the body by means of improvised apparatus, was a source of astonishment. It was all given into the two axillæ alternately, and no tenderness remained a day or two after the last injection. The addition of brandy did not make it at all irritating.

A CASE OF APPENDICITIS WITH SUPPURATIVE PERITONITIS; OPERATION AND RECOVERY.

By MAJOR E. W. BLISS.
Royal Army Medical Corps.

CORPORAL F., R.G.A., was sent to the Military Hospital, Portsmouth, as a direct admission from Gosport, suffering from the above condition.

History of Present Illness.—Four days before admission patient felt sick, but did not actually vomit until after eating his breakfast. There was at this time no pain. The vomiting continued without pain during the next two days, and he was constipated during the same period. On the day of admission he was wakened up by very severe pain over the right iliac region, and the vomiting continued. He reported sick, and arrangements were at once made for sending him over to this hospital for operation.

On Admission.—Patient complained of great pain and tenderness over abdomen, especially in the right iliac region, and frequent vomiting—not fæculent. The percussion note was tympanitic over the whole of the front of the abdomen, but more so on the right side, and especially so over the right iliac region. There was some dulness in both flanks; liver dulness lost, tongue rather dry and furred, absolute constipation, dorsal decubitus; temperature 101·5° F., pulse 110, respirations 42. There was a systolic and also a presystolic murmur in the mitral area, which, apparently, was pre-existing, as there was a history of invaliding from abroad for "V.D.H."

Immediate operation was decided upon. Under A.C.E., exhibited on a Silk's inhaler, and administered by Lieutenant J. A. Bennett, R.A.M.C., and assisted by Major R. J. Copeland, R.A.M.C., I made an incision about 4 inches long, the centre being over McBurney's spot; the muscle fibres were divided, all bleeding stopped, and then the peritoneum picked up and opened. The intestine was very much distended and intensely inflamed. Some coils of small intestine presented in the wound; no adhesions found. The intestine in the region of the wound was found to be bathed in pus; this was wiped off and the small intestine packed away

with gauze pads. The appendix was next looked for and found without difficulty. It was much swollen, about $5\frac{1}{2}$ inches long; a foreign body could be felt the whole way down it, and from the "crackling" feel it appeared to be distended with gas. No perforation could be made out, neither was the pus around it offensive. The appendix was removed, the stump ligatured and then invaginated, the peritoneal coat being carefully sutured over the stump with fine silk. The pelvis and right flank were next examined, and a large collection of pus was found in each situation. This was carefully cleaned away with gauze mops and strips, and the intestine carefully cleansed, till no more pus could be found in this situation. The rest of the abdomen was next examined, the incision being extended upwards. The pus was found not to have reached as high as the liver and only just past the middle line towards the left. All the remaining pus was carefully wiped away and any contaminated intestine cleansed. A large Keith's drainage tube and gauze wicks were then passed down into the pelvis, and the rest of the wound sutured in three layers. The patient bore the anæsthetic and operation very well.

The following day the patient felt very much better, temperature, a.m., 99° F., p.m., 100.6° F., pulse 90 and 92, and respirations 28 to 24. The gauze wicks passed through the tubes were withdrawn and fresh ones repeatedly passed down till no more discharge came away, and patient had a glycerine enema which acted satisfactorily. The next day the condition steadily improved. Some of the discharge taken from a gauze wick was stained and examined, and a large number of polymorphonuclear cells were found with a vast number of *Bacillus coli communis*. It is interesting to note that two days later and subsequently no *B. coli communis* could be found. From this time patient made an uninterrupted recovery. He was kept raised up as much as possible in bed. The glass tube was changed for a rubber one on the fifth day, and this replaced five days later by gauze wicks only. The wound, except a small sinus, had closed up by the sixteenth day, and this was quite closed by the twenty-fifth day. He was kept without anything by the mouth for the first twenty-four hours, the mouth being rinsed out with hot water at intervals. From the second day nourishment in the form of milk, bovril, &c., was given in increasing quantities.

The case is interesting from several points of view: (a) The appendix, which contained a fæcal concretion, extending the whole way from tip to base like a long greenish-black worm. (b) The absence of a foul smell from the pus, which, as shown two days later, was loaded with *B. coli communis*. (c) The rapidity with which *B. coli communis* disappeared. (d) The absence of perforation of the appendix with the presence of such a large quantity of pus.

SOME REMARKS ON THE PREVENTION OF INFECTIOUS
DISEASE ON BOARD TROOPSHIPS.

BY MAJOR A. E. SMITHSON.

Royal Army Medical Corps.

HAVING made a voyage in H.M.T. "Bræmar Castle" from Southampton to Cape Town, I venture to make the following remarks :—

On this particular voyage the troops embarked on January 8th. The men had almost all had furlough before leaving, and must have been scattered in many towns and villages throughout the country. Inter-course with their neighbours had also been increased through the festivities of the seasons of Christmas and New Year. In this manner there was considerable risk of some one coming in contact with an infectious disease. In order to lessen the risk of this occurrence on board ship it is suggested that all men should have returned from furlough fourteen days previous to embarkation, and that during this time they should be frequently inspected by a medical officer.

Since the South African War an attempt has been made to label the bedding of troops so as to ensure its use by the same man. This is done by a stout leather label surrounded by eyelet holes through which a leather lace is passed to fasten it on to the hammock. The number of the man's mess is written on it in blue pencil, and the man is advised by the troop deck officer to also write his own name upon it. Unfortunately, as far as my experience on this voyage is concerned, the system was a failure. The lace is found to be useful by some men as a bootlace, and so the label is lost. Furthermore, if a man thinks he will be found having a wrong hammock, a rub with his foot effectually blots out the number on the label. The importance of a man using the same bedding every night is very great, especially in the presence of diseases having a long incubation period, as disinfection of the bedding of a patient may only be applied to that in which he last slept, and the bedding which he occupied on previous nights is a very likely source of infection to others. This uncertain state of things might be improved by quartermasters of regiments issuing to the troops a tin label having stamped upon it the number, rank, name and regiment of the man concerned. This has already been done in the case of identity tickets. On board ship, the man could be served out by the troop deck officer with a small tin disc having upon it the number of the mess and the number of the man in that mess. These two tickets could then be attached to the hammock. On disembarking the latter label could then be handed in for further use. More frequent inspections by regimental officers would ensure the success of this system.

As a further means of prevention, it should be insisted that the ventilating electric fans (inlets) should be kept working day and night throughout the voyage. During the voyage in question these fans were

only working at certain times, a neglect which was a cause of censure by the Senior Medical Officer.

The isolation ward on board ship should be provided with separate lavatory accommodation. A family consisting of the father, mother and four little children had to be isolated on account of scarlet fever, and the want of this essential was much felt.

The importance of avoiding overcrowding is so obvious as to need no comment, but I would mention that in the troop deck of the married families, much air space was taken up by boxes containing clothes being placed in the berths. This could be avoided by allotting a "change of clothing" baggage room, and I think the higher standard of comfort now required by the soldier's wife demands this concession.

A CASE OF SEPTIC CEREBRO-SPINAL MENINGITIS.

BY MAJOR H. E. WINTER.

Royal Army Medical Corps.

TRUMPETER H., 77th Company, R.G.A, aged 18 years and 6 months, with 4 years and 4 months service, arrived in Colaba from England in February, 1907, and reported himself sick on July 4th, 1907. He had had no previous illness in the Service. He was detained by the Assistant-Surgeon on duty, who, from the symptoms, considered the case one of ptomaine poisoning. A dose of castor oil and opium was administered.

On admission into my ward next morning he was complaining of severe headache, his face was flushed, and he had persistent vomiting, the vomited matter consisting of curdled milk and bile-stained fluid; the temperature was normal, and the bowels not open for three days. He was very restless and kept on turning from side to side and sighing. He was also excitable and tried to impress on one that "he would be quite well if allowed out of hospital." He answered questions quite rationally, in fact, intelligently, but when one ceased speaking to him he would begin to talk nonsense. He was stated to be very fond of sea-bathing and diving in shallow water, but no "history" was forthcoming, and he showed no signs of injury to the head or spine. It was also stated that "he used to go about in the heat of the day in a small cap."

On July 6th the sickness ceased, but the temperature rose to 101·6° F. in the morning, and 102·4° F. in the evening. He was still quite rational. The bowels were very obstinate and did not react to drugs, so he was given a soap and water enema, which acted satisfactorily, bringing away a large quantity of scybala and liquid fæces. On the 7th he complained of severe pain in the nape of the neck, and on the 8th the muscles of the neck were rigid and he kept his head in one position and turned towards the left side.

On the 9th his temperature gradually dropped to normal, but notwithstanding this the pulse-rate was much accelerated, being 120. Head still retracted and towards the left side. Any movement of the head caused intense pain; pupils dilated and fixed. No symptoms of ear or nose disease, no throat symptoms. The *tâche meningitique* was extremely well marked. Abdomen retracted; Kernig's sign present. Examination of blood showed numerous large polynuclears. There were signs of hypostatic congestion of the base of the right lung.

On the 10th, in the morning, after a good night, the pulse was very rapid and irregular; temperature normal, decubitus dorsal with the legs drawn up, but he frequently straightened them out, and kept on moving his arms and hands about as if "picking things out of the air." In the afternoon he was delirious and there was marked internal strabismus.

On the 11th, in the morning, he was quite rational, strabismus had disappeared, pulse was very quick, "running," and difficult to count, and he complained of much pain in the nape of the neck. In the evening the pulse was accelerated, but quite regular. No paralysis.

On July 12th he was reported to have had no sleep during the night. He took all his nourishment well; no dysphagia; was very drowsy; head still retracted towards the left; pulse regular, but accelerated.

On the 13th he slept well after an opiate (liq. opii sed., mxxv.), but was very shaky and tremulous. No cough, no expectoration. The bases of both lungs, especially the right, were extensively congested. He developed Cheyne-Stokes' respiration in the evening and died suddenly at 8.30 p.m. A few minutes before death opisthotonus supervened.

Post-mortem (twelve hours after death).—*Post-mortem* rigidity almost passed off. *Post-mortem* staining of dependent parts well marked, also patches on the face. A curious feature was that these patches corresponded to the flush patches during life. On removing the skull cap a quantity of dark venous fluid escaped. The vessels of the dura and pia mater were much dilated and engorged with blood. On removing the dura mater, a difficult process, owing to the extreme softness of the brain tissues, no deposit of lymph or pus was found on the upper surface of the brain, but the convolutions were intensely injected with blood. On removing the brain and examining the base, there was a good deal of recent opaque, greyish-yellow gelatinous lymph, with some pus, in the meshes of the pia mater over the optic chiasma and space behind it. The condition extended over the crura and pons varolii and into the fissures of Sylvius, both of which were glued together by adhesions, as also were other fissures and sulci at the base. The same kind of lymph extended all around the medulla in the meshes of the pia mater. The whole substance of the brain and cerebellum was acutely injected. The ventricles contained a good deal of semi-opaque cerebro-spinal fluid, and there were adhesions of patches of lymph. On examining the inside of the base of the skull, there was no evidence of middle ear disease nor of

spread of infection from the nasal cavities. The pituitary body was glued down to the fossa by lymph, and the dura mater was adherent to the underlying bone at several points, especially round the crista galli of the ethmoid.

The spinal cord was removed, and between it and the dura mater there was a thick packing of yellow gelatinous lymph and pus, which was apparently more copious in the lumbar and lower dorsal regions. The process, however, extended through the foramen magnum, and was continuous with that described at the base of the brain.

The circumvallate papillæ and mucous glands at the base of the tongue were very much hypertrophied. They were found on section to be composed of masses of lymphoid tissues due to great hyperplasia of the submucous tissues normally present in that position. The tonsils externally appeared normal, though slightly enlarged; their surface was smooth and only slightly congested. On cutting them across the follicles were found to contain thick offensive pus. Little of the true tonsillar tissues remained.

The bases of both lungs, but more especially the right, were extensively congested (hypostatic congestion). No pneumonia. The other organs were normal, except that their vessels were all extensively injected with blood.

Bacteriology.—Cultures on agar-agar from the effused lymph showed numerous colonies of staphylococci. Smears on slides showed streptococci and pus cells. *Diplococcus intracellularis meningitis* not found. A section of the cord, kindly made by Captain Mackie, I.M.S., showed under the microscope, recent lymph, chiefly on posterior surface of cord, in large amount, and exhibited the usual characters of acute inflammation, together with a few scattered cocci. A thin layer extended to the anterior surface underlying the spinal dura. The central canal was dilated and contained excess of leucocytes.

Points of Interest.—Considering the extensive effusion of lymph along the whole length of the cord, most of the usual symptoms of spinal meningitis were absent throughout, viz., severe pain in the back, increased by pressure, shooting and darting pains of a paroxysmal character radiating in the course of the nerves, hyperæsthesia of the skin, opisthotonus (this symptom was absent until a few minutes before death), retention of urine, paralysis, anæsthesia, dysphagia, great elevation of temperature, slow pulse (there was considerable acceleration of pulse). A peculiar feature with reference to the pulse was, that in the morning it was very rapid and "running," notwithstanding reports that he had slept well during the night; in the evenings the pulse, although accelerated, was invariably steady.

Remarks as to Cause.—Injury to the head, otitis media, suppuration of mastoid cells, necrosis of skull, disease of nasal cavities, &c., can all be eliminated in this case as a cause of the meningitis. There is a history

of exposure to sun, but the symptoms do not point to this. The only possible cause traced was the condition of the tonsils, and it is probable that the infection found its way from the tonsils by the deep lymphatics, through the cribriform plate of the ethmoid, or through one of the foramina (anterior ethmoidal or the foramen cæcum) into the anterior fossa of the skull, and subsequently spread to the spinal cord. The focus of inflammation seen in the neighbourhood of the crista galli is strongly in favour of this being the route of infection, and the absence of any other focus of suppuration to account for it, renders the tonsillar origin almost certain.

My thanks are due to Captain F. P. Mackie, I.M.S., and Captain J. G. Berne, R.A.M.C., for their valuable and skilful assistance during the *post-mortem*, and for the bacteriological examination of the exudations and spinal cord.

A CASE OF DIETL'S CRISIS.

BY CAPTAIN J. FAIRBAIRN.

Royal Army Medical Corps.

Mrs. M., aged 28, 2-para, attended the Family Hospital, Colaba, on the morning of July 19th, 1907, complaining of great pain in the right side, shooting down into the groin, frequency of micturition and pain on passing water. She had vomited frequently during the night, and obtained no sleep on account of the severity of the pain. The attack had come on suddenly. She looked worn and ill, with dark rings under the eyes. The pulse was 95 per minute, of good tension and volume, and regular in time and action. The respiration was not increased; temperature 101° F. I sent her home to bed, where a more thorough examination was carried out. On examining the right side nothing definite could be made out, the abdominal muscles being contracted, but great tenderness was found in the right hypochondriac and lumbar regions. The urine contained blood in fairly large amount, and gave a corresponding reaction for albumen. It was markedly acid in reaction and showed, after centrifuging, pus cells, flat epithelial cells, and cells of a transitional type. Absence of crystals was remarked. All other systems seemed healthy, and a provisional diagnosis of renal calculus was made. Treatment: urotropine, gr. x., and tinct. hyocyami, ℥xv., every three hours, turpentine stupes and a calomel purge; plain milk diet.

The history elicited was that she had had two similar attacks previously, which were diagnosed "inflammation of the bladder." The first attack occurred in April, 1899, six weeks after her first confinement, which was premature, and at which time she lost considerable weight, which she has never regained. The second attack occurred in August, 1904. Her menstrual periods had been regular, the last occurring on June 22nd, 1907. She had a miscarriage in December, 1899. The

bowels are always regular and she denies tight lacing. She is often troubled with pain in the right side, the pain increasing when a swelling occurs in the side, and diminishing on the disappearance of the swelling, at which time there is an increased flow of urine. But, except for the three severe attacks, the pain in the side is never bad enough to cause her to seek medical advice. The pain occurs less often when she is pregnant. Just before the present attack she had been doing some heavy work, viz., lifting pails of water and scrubbing a floor.

July 6th.—The pain is much less and she had slept well during the night. Temperature, 100° F. The bowels had acted freely. The same treatment was continued, except that pot. acetat., gr. xv., was added to the medicine, which was given three times daily instead of three-hourly.

July 7th.—Temperature 99° F. All pain has gone, but tenderness persists. The abdominal muscles remain rigid, preventing satisfactory palpation. The urine is high coloured.

July 8th.—Temperature normal. The urine is nearly healthy in colour. All symptoms have disappeared and the tenderness has almost gone. Examination of the side now reveals a tumour, lying in the right hypochondriac and lumbar regions. It descends on inspiration and can be pushed from side to side and upwards and downwards. On grasping the tumour firmly a feeling of sickness is produced. The diagnosis was now clear, viz., movable kidney. She was allowed to sit up in bed and a more liberal diet was given.

July 10th.—Patient feels quite well again and was allowed to get up. A pad and bandage were applied, the object being to support the affected organ.

Examination of the Urine.—Sp. gravity 1012; neutral in reaction. No blood nor albumen present. There was some pus and a few epithelial cells and crystals of phosphates. The specimen was probably not a fresh one.

July 12. Urine alkaline in reaction. It still contains pus cells; is of light amber colour. No crystals could be detected. She had a slight transient pain in the side to-day, otherwise the progress is satisfactory. Patient is up and about.

The case is interesting on account of the initial difficulty in diagnosis, the symptoms all pointing to renal calculus. It is also further interesting because of: (1) The occurrence of intermittent attacks of hydro-nephrosis; (2) the freedom of the urine from crystals; (3) there is no suspicion of gout in the case.

The cause of the movable kidney in this case was probably the disturbance of the abdominal organs during pregnancy, concurrently with the loss of adipose tissue, which immediately preceded the first crisis. The immediate cause of the crisis was probably due to some over-exertion

causing a twist in the hilum of the kidney, an explanation first advanced by Dietl. The history of the case is instructive, and, had I laid more stress on it, I would have been more cautious in adopting even a provisional diagnosis of renal calculus.

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RARE FORM OF FRACTURE OF PATELLA.¹

By MAJOR R. J. BLACKHAM.

Royal Army Medical Corps.

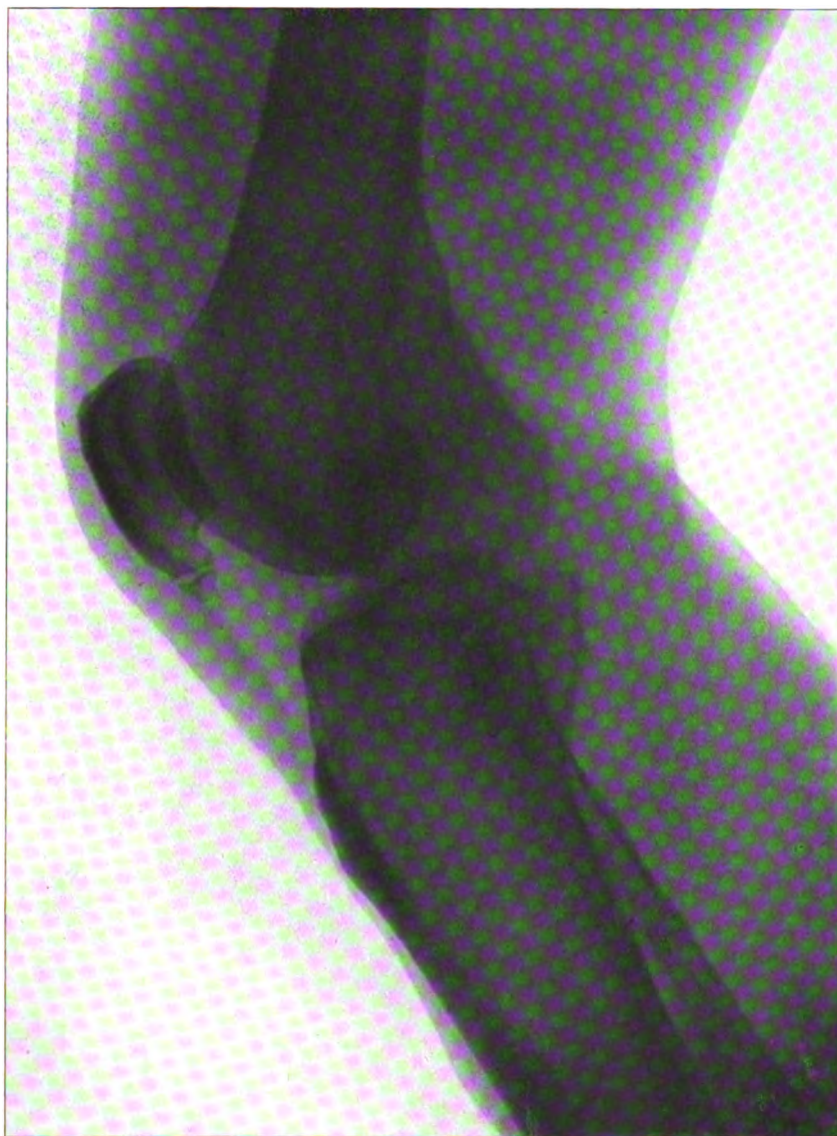
FRACTURES of the patella without displacement of fragments are, of course, well known, but the injury which I venture to bring before the Society to-night is, I think, sufficiently uncommon to merit record.

The patient, an officer, aged 42, sustained a fall off his bicycle early last December. He was able to remount his machine after the fall, and did not seek medical advice until four days after the receipt of the injury. When I saw him there was an abrasion over the lower part of the patella, slight effusion into the joint and some pain, but the officer had walked to his office and was not markedly lame. I enjoined rest, which injunction was, I fear, not very rigorously obeyed, and prescribed lead and opium lotion. The abrasion healed in about a week, and I was then able to detect an irregularity near the apex of the patella. I advised an X-ray photograph, and by this means the fracture shown in the accompanying skiagram was observed. As it was then obviously too late to advocate a back splint, even if such treatment was likely to be of benefit, the patient was, after consultation with a brother officer, directed to use the limb as little as possible for six weeks, and the joint was supported first by a flannel bandage and later by a laced knee-cap. He is now practically well and seems to suffer no inconvenience as the result of the accident, although it would appear that bony union has not taken place between the fragments of the patella.

The accident points to the importance of using the Röntgen rays in all injuries of joints. There can be little doubt that many so-called sprains are really obscure fractures such as this one. The condition is also of medico-legal interest in view of recent cases in the High Courts, as had the accident occurred in private practice, and the surgeon failed to recognise the serious nature of the injury, it might easily, as has actually happened, have led to an action for malpraxis.

I am indebted to Captain J. J. W. Prescott, D.S.O., for the excellent skiagram accompanying this note.

¹ Paper read before the Plymouth Medical Society, March 20th, 1907.



To illustrate "Rare Form of Fracture of Patella."

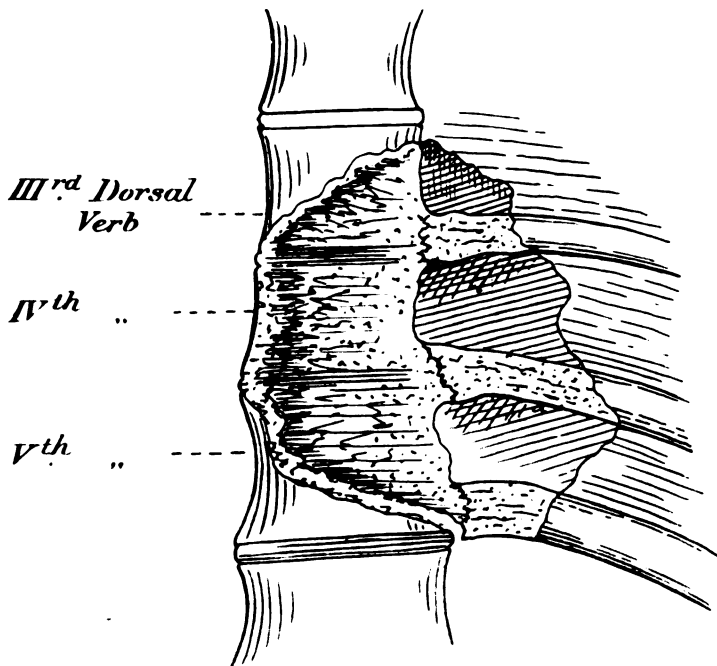
By Major R. J. BLACKHAM, R.A.M.C.

A CASE OF SUDDEN DEATH FROM ANEURYSM WITHOUT PREVIOUS SYMPTOMS.

By CAPTAIN A. C. OSBURN.
Royal Army Medical Corps.

GUNNER R., of the Royal Garrison Artillery, was brought to the detention ward at Agra Fort with the history of having "vomited blood in his sleep." Almost immediately after admission to the ward he vomited a pint of bright-coloured blood and expired.

His medical history sheet showed no history of venereal disease and no previous admission to hospital. He had never attended hospital for any minor complaint and never complained to his comrades of pain or discomfort. He was a particularly fine, healthy-looking man, a good soldier and fond of games and long walks.



Post mortem.—A saccular aneurysm, the size of a large orange ($3\frac{1}{2}$ inches by $3\frac{1}{2}$ inches), was found at the junction of the transverse and thoracic aorta; the aneurysm had ruptured into the œsophagus at the level of the junction of the right and left bronchi; the communication with the aorta was a smooth-walled opening about half an inch in diameter, the communication being about 1 inch beyond the origin of the

left subclavian artery. The aneurysm was evidently a long-standing one, and was nearly filled with concentric layers of altered blood-clot. There was extreme erosion of the third, fourth and fifth dorsal vertebræ extending fully $1\frac{1}{2}$ inches on to the corresponding ribs of the left side.

In the case of the fourth vertebra the body was worn away to a thin shell of bone separating the aneurysmal cavity from the spinal cord, which latter appeared unaltered to the naked eye. The fourth rib and the corresponding articular process on the left side formed a complete bridge across the aneurysmal cavity. All the other organs were normal. The lungs showed no signs of pressure at the base, but there were signs of healed atheromatous ulcers in the thoracic aorta, and two suspicious pigmented circular scars on the upper third of both legs.

In view of the extensive erosion of the spine, and the size of the aneurysm, it seems odd that there was so little, if any, pain. In this case the intervertebral discs were, if anything, more eroded than the vertebræ.

A SUGGESTION.

BY CAPTAIN R. V. COWEY.
Royal Army Medical Corps.

During the last six months or so I have recorded by means of Snellen's types the vision of some hundreds of recruits, with the result that I have been surprised to find how large a proportion of them have better vision with the left eye than with the right, notwithstanding which fact they are all taught on the barrack square to fire from their right shoulder.

I think no one will believe that a man whose vision is only equal to from D. 12 to D. 36 with his right eye will ever become anything but an indifferent shot, and if that man's vision equals D. 6 with his left eye, it is surely absurd not to teach him from the first to shoot from his left shoulder.

If a man on enlistment is taught to fire from the right shoulder, it will be difficult for him to learn to fire from his left, as he will feel awkward in the new position. By regulations a man is permitted to fire from either shoulder, but, as a matter of fact, he rarely changes from the position he has been taught, as in many cases he does not realise that his left eye is better than his right, and even if he did would probably not be bothered to change, and so the result is that he goes through his service an indifferent shot when he might very well become a marksman by adopting the left shoulder position.

Many old soldiers pass through my hands for enlistment into the Militia, and several of them have been found to see better with the left eye than the right, yet on questioning them in no case have any of them stated that they fired from the left shoulder, and most of them acknowledged they were not good shots.

I have enquired of several officers and non-commissioned officers of various regiments as to whether any of their men shoot from the left shoulder, and have found very few who have seen this position used, although there are many game shots with better left eye vision than right who shoot from the left shoulder. The reason, no doubt, why right shoulder shooting is universal is for the sake of uniformity, but it is surely wrong that the desire for uniformity should stand in the way of efficiency.

Regulations permit of a man with a vision equal to D. 36 with one eye, and D. 6 with the other, being enlisted, but it is useless expecting him to shoot with the D. 36 eye.

Of 137 men whose attestation papers were examined, 61 had vision equal to D. 6 with each eye, 34 had better right eye vision, 18 had impaired but equal vision, and 24 had better left eye vision. It is seen by the above that over 17 per cent. of men see better with the left than with the right eye, so it is obvious that if my suggestion was carried out the shooting of this 17 per cent. of men would be in every case considerably improved, with great gain to the fighting efficiency of a regiment, as these men are almost certainly among the worst shots.

I would recommend that on enlistment a man's attestation paper be examined to see which eye is there recorded as being the better, and that he be taught to fire accordingly.

Reports, &c.

ANTI-TYPHOID INOCULATION.

BY MAJOR H. J. M. BUIST, D.S.O.

Royal Army Medical Corps.

DURING the summer months of 1906, arrangements were made for the re-introduction of anti-typhoid inoculations generally throughout the Army, both at home and abroad.

Prior to this extension of the system a few selected regimental units had been experimentally inoculated, and the results obtained appeared to justify the belief that anti-typhoid vaccine, as prepared by the new methods, would prove a safe and valuable prophylactic against enteric fever. In order, however, to demonstrate the efficacy or otherwise of the vaccine, it became necessary to establish some general method for the collection of statistical data connected with these operations. In former years anti-typhoid statistical data were collected by a series of returns compiled from the information contained mainly in local or station registers. At each garrison the names and particulars of the inoculated were entered in the corresponding station register, and at the termination of the

year the information thus obtained was summarised and presented in convenient tabular forms for comparative purposes. These registers furnished a detailed history of the outbreak of enteric fever among the inoculated, while the group returns showed the relative incidence of the disease in the uninoculated and the inoculated.

The correctness of the figures was dependent on the accuracy of the admission, discharge, and transfer records in the local registers, the maintenance of which entailed considerable care and trouble. The difficulties originally experienced in the upkeep of the registers were, however, still further enhanced by the effect of the recent Army Order (No. 158, dated August, 1905), which directed the transfer of the men's medical history sheets from the custody of the medical authorities to the care of the regimental commanders. The movements of individuals from one station to another were thus rendered more difficult to follow, and it was considered doubtful whether, in view of the numberless changes to which our garrisons are subject, even approximately accurate records of the inoculated could be obtained by medical officers in charge of registers. Under these circumstances it was decided to abandon the register method, and the choice fell on a census system. Accordingly, a fresh scheme was brought into force, and forms of returns and circular memoranda containing instructions for the compilation of anti-typhoid inoculation data, on the census principle, were circulated to all stations; and medical officers in charge of effective troops were at the same time directed to effect the process of "census taking" on a given date. The day selected was March 1st, 1907. The scheme entailed the examination of every soldier's medical history sheet, at each station, and the extraction therefrom of all particulars relating to the inoculated. The data thus procured were summarised and submitted in tabular form. In order at the same time to check leakage of the inoculated lost to the Service during the year, through death, invaliding, and transfer, provision was made for the upkeep of running registers at stations and depôts where these casualties occurred. By this means it was anticipated that the medical history of each inoculated case serving in the Army during the year under observation would be obtained, and that from this information general comparative returns could be compiled. The returns, when completed, were forwarded to the War Office, where they have since been analysed.

A detailed examination of the figures shows that the returns are far from complete. In some cases, *e.g.*, India, the records of whole stations, such as Rawal Pindi, Mian Mir, &c., have been

omitted, and in many instances the figures representing average annual strength of garrisons differ widely from that known to have existed. Taking the total figures as submitted (*vide* Table I.), we find that the returns from home stations give the average annual strength of the Army at 90,163, while for stations abroad and for India the figures are 31,741 and 40,013 respectively, whereas they

TABLE I.—SHOWING THE RESULT OF PREVENTIVE INOCULATIONS AGAINST ENTERIC FEVER FOR THE PERIOD FROM MARCH 1ST, 1906, TO FEBRUARY 28TH, 1907.

Place	Average strength	Average number of men inoculated	Average number of men not inoculated	CASES OF ENTERIC FEVER									
				Amongst the men inoculated		Amongst the men not inoculated		Ratio per 1,000 inoculated		Ratio per 1,000 not inoculated		Percentage of mortality to attack	
				Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Inoculated	Not inoculated
United Kingdom	90,163	1,963	88,200	Nil	Nil	56	7	Nil	Nil	·63	·07	Nil	12·50
Stations abroad	31,741	791	30,950	5	Nil	193	20	6·32	Nil	6·23	·64	Nil	10·36
India ..	40,013	2,130	37,883	8	1	770	101	3·75	·46	20·32	2·66	12·50	13·11
Total..	161,917	4,884	157,033	13	1	1,019	128	2·66	·20	6·48	·81	7·69	12·56

should be approximately for home stations 113,000, for stations abroad 42,500, and for India 70,000. The discrepancy between the corrected strengths and those submitted is due, partly to the omission of certain stations, and partly to the loss in transit of men on board ship, on rail, at manœuvres, &c., at the time of census taking. The effect of these errors on comparative results is, however, modified by the subsequent figures shown in Table I. relating to the total number of enteric cases admitted in each command. Here again a discrepancy exists between the actual numbers known to have occurred during the year and the figures submitted, the former being invariably in excess of the latter. We can, however, reasonably assume that a proportion at least of the enteric omissions is included in the absentee strengths, and it may be that the whole can be accounted for in this way.

If, then, we accept the figures of enteric incidence as correlated to those of average strength given in the returns, we arrive at the results shown in Table I. It is, however, necessary to point out that the division between the inoculated and the uninoculated is an

TABLE II.—PARTICULARS RELATING TO THIRTEEN

Corps and No.	Rank and name	Age	Service	Date of arrival in the country	Number of days protected by inoculation during the year	PLACE AND DATE OF INOCULATION	
						First inoculation	Second inoculation
Stations							
2nd Dragoon Guards 4278	Tptr. W. T.	25 $\frac{1}{12}$	11 $\frac{1}{12}$	1.7.04	70	Aldershot, 27.11.01	Nil
1st King's Own Yorks. Light Inf. 8874	Pte. G. C.	19	$\frac{6}{12}$	28.9.06	34	Pretoria, 24.11.06	Pretoria, 8.12.06
1st King's Own Yorks. Light Inf. 7884	„ C. B.	21 $\frac{1}{12}$	3 $\frac{4}{12}$	„	127	Gibraltar, 17.8.06	Gibraltar, 31.8.06
1st King's Own Yorks. Light Inf. 8849	Boy W. O.	16 $\frac{7}{12}$	$\frac{9}{12}$	„	136	Pretoria, 24.11.06	Pretoria, 8.12.06
84th Co. Royal Garrison Artillery 33119	Gr. A. R.	32 $\frac{5}{12}$	8 $\frac{1}{12}$	13.1.04	111	Newport, Mon., 7.11.99	Nil
In							
1st South Lanes. 7958	Pte. C. G.	22	2	2.12.05	217	Shorncliffe, 15.9.05	Nil
Durham Light Infantry 7277	„ W. B.	24	6	28.10.02	64	Aldershot, 7.5.02	„
S. & T. Corps 3496	S.-Sgt. W. H.	29	11 $\frac{1}{12}$	13.10.99	198	Shorncliffe, 6.9.99	Meerut, 3.1.00
15th Hussars 4012	„ F. E.	31	7	„	296	Shorncliffe, 28.6.99	Nil
2nd North Staffordshire 7813	Pte. S. W.	20	2	10.11.06	13	Multan, 8.2.07	„
1st Liverpools 5426	„ J. F.	24	10 $\frac{6}{12}$	23.11.02	186	Ladysmith, 18.9.99	„
2nd Royal Highlanders 7908	Sgt. A. W.	23	5 $\frac{6}{12}$	„	118	s.s. "Sicilia" 5.11.02	„
Highland Light Infantry	Boy, un- known	..	..	..	..	1.12.06	..

* Seventy-two days in hospital.

† Mild case. Left Darjeeling for

CASES OF ENTERIC FEVER AMONGST THE INOCULATED.

BATCH NUMBER AND DATE OF PREPARATION OF INOCULATION MATERIAL. DOSE GIVEN		Change of station during the year, with dates	CASES OF ENTERIC FEVER AMONGST INOCULATED MEN				
First inoculation	Second inoculation		Date of admission and place	Interval between inoculation and admission days	Duration of pyrexia, days	Relapse	Result
<i>Abroad.</i>							
Unknown	<i>Nil</i>	..	Pretoria, 10.5.06	4 years, 164 days	18	..	To duty, 6.7.06
IX. 4.5.06, 1 cc.	IX. 4.5.06, 2 cc.	From England, 29.9.06	Pretoria, 28.12.06	34 days	29	..	Still in hospital
X. 8.5.06, 1 cc.	X. 8.5.06, 2 cc.	From Gibraltar, 29.9.06	Pretoria, 22.12.06	127 days	10	..	To duty, 23.2.06
IX. 4.5.06, $\frac{1}{2}$ cc.	IX. 4.5.06, $1\frac{1}{2}$ cc.	From England, 29.9.06	Pretoria, 10.2.07	65 days	20	..	Still in hospital
Unknown	<i>Nil</i>	..	Capetown, 19.6.06	6 years, 223 days	16	..	Recovered, discharged 14.8.06
<i>dia.</i>							
Unknown	<i>Nil</i>	From Jubulpore to Bareilly, Jan., 1907	Saugor, 3.10.06	383 days	Unknown*	..	Recovered
"	"	..	4.5.06	3 years, 363 days	..	4th week	"
III. Netley, 28.6.99 0.75 cc.	II. Netley, 9.6.99 —	..	14.9.06	7 years, 7 days	10	..	Recovered, 13.11.06
III. Netley, 28.6.99 0.75 cc.	<i>Nil</i>	..	22.12.06	7 years, 177 days	12	No relapse	Died
VIII. 30.3.06 1 cc.	"	..	21.2.07	13 days	22	..	Still in hospital
28.5.99 0.75 cc.	"	..	3.9.06	6 years, 349 days	..	..	Recovered
Unknown	"	Khanspur 21.7.06, Peshawar 12.10.06	27.6.06	3 years, 233 days	9	..	Recovered, 15.8.06
No further	particulars	known.†					

Dinapore, September 8th, 1906.

arbitrary one, and that among the non-inoculated are included men of the following classes :—

(a) Those inoculated, but who possess no record of the operation on their medical history sheets ; (b) those who have already passed through an attack of enteric fever.

The figures in this table show that in the three divisions as a whole into which the Army has been divided, the admission-rates are greatly in excess among the uninoculated, while the mortality-rates and the percentage of mortality to attack, also compare more favourably for the inoculated. In the case of stations abroad, where alone the difference in the admission-rates of the inoculated and the uninoculated is in favour of the latter, it may be stated that all the five admissions from among the inoculated occurred in South Africa : four at Roberts' Heights, Transvaal, and one at Cape Town.

From the localised distribution and more or less simultaneous appearance of the cases at Roberts' Heights, it at first seemed as if the failure of protection might have been due to some fault either in the preparation of the vaccine or its method of injection, but an examination of the particulars of each case reveals little to support such a suspicion. Three out of these five men were inoculated at different stations on different dates, and except that three out of the five cases belonged to the same regiment, and were exposed for similar periods to the risks of enteric infection in South Africa and at Roberts' Heights, there are no common factors connected with the attacks. Three of the cases were inoculated with double doses and two with a single dosage of vaccine. The particulars in regard to these cases, as well as for those which occurred in India, are shown in Table II. In view of the limited period of protection claimed by the advocates of anti-typhoid inoculation this table is of interest as showing that seven out of the thirteen cases contracted Enteric Fever at an interval of over three years after inoculation, while in the case of death the intervening period between inoculation and attack extended well over seven years.

It will be noticed that, while 128 deaths are recorded during the year among the uninoculated, only a single death occurred among the inoculated. The fatality took place at Muttra, India, in January of the current year. The deceased, Staff-Sergeant F. E., was 31 years of age, and had over seven years' service at the time of his last illness. He had been inoculated at Shorncliffe on June 28th, 1899, receiving but one dose of vaccine. After a lapse of 2,733 days (over seven years) he contracted enteric fever and was admitted to hospital on December 22nd, 1906. The record of his

case gives a pyrexial period of only twelve days, and from this we may gather that the attack was of an acute and malignant nature.

Unfortunately, it has been found impossible to check the figures of enteric incidence furnished by the various stations which contributed towards the general totals shown in Table I., and the only means of obtaining even a rough idea of their approximate correctness is by comparing the total ratios as shown in Table I. with those for the corresponding three divisions for the calendar year 1906, as given in the Annual Returns.

TABLE III.—COMPARATIVE INCIDENCE OF ENTERIC FEVER AS SHOWN IN TABLE I., AND IN THE ANNUAL REPORT FOR THE YEAR ENDING DECEMBER 31ST, 1906.

Place	Average strength as per Table I.	Average strength as per Annual Report, 1906	CASES OF ENTERIC FEVER									
			Amongst all men as shown in Table I.		Amongst all men as shown in Annual Report, 1906		Ratio per 1,000 for all men as shown in Table I.		Ratio per 1,000 for all men as shown in Annual Report, 1906		Percentage of mortality to attack among all men as shown in—	
			Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Admissions	Deaths	Table I.	Annual Report, 1906
United Kingdom	90,163	113,532	56	7	73	11	·62	·07	·64	·09	12·50	15·06
Stations abroad	31,741	42,561	198	20	264	35	6·23	·63	6·20	·82	10·10	13·25
India ..	40,013	70,193	778	102	1,095	224	19·44	2·54	15·59	3·19	13·11	20·45

The comparative figures are given in Table III. Except in the death ratio of "Stations Abroad," and the admission and mortality ratios for India, the figures as given in the Annual Return, and those shown in Table I. almost exactly coincide. The differences are most marked in the figures for India, and the high admission ratio (19·4 per 1,000) in the inoculation return, as compared with 15·6 per 1,000 in the Annual Return, points to the inclusion in the anti-typhoid inoculation return, of an undue proportion of enteric fever cases; while their lessened severity is shown in the smaller mortality ratio of 2·5 per 1,000, as against 3·19 per 1,000—the figures in the Annual Return.

From the foregoing we may thus fairly assume that the figures in Table I. for average strength and the number of enteric admissions have probably a "normal" correlation to each other in so far as the home stations and "Stations Abroad" are concerned, but that in the case of India the figures for the number of admissions are abnormally high, while the mortality figures are below the

normal. If now we compare the admission and death ratios of the inoculated alone with the general admission and mortality ratios for India during 1906, we find that the disparity, although not so great as that shown between the inoculated and the uninoculated in Table I., is very considerable, results which point materially to the beneficial effects of inoculation. It is unfortunate that complete reliance cannot be placed on the accuracy of the numbers in Table I. to enable any definite conclusion to be arrived at as to the effects of inoculation, but the figures of the inoculated compare so favourably with those of the uninoculated, and also with the general admission- and death-rates for enteric fever in India during 1906, that it is difficult to conceive the margin of error can be so large as to disprove the protective value of anti-typhoid inoculation.

TABLE IV.—RESULTS OF ANTI-TYPHOID INOCULATION IN SEVEN LARGE INDIAN STATIONS¹ DURING THE SIX MONTHS—JANUARY 1ST TO JUNE 30TH, 1907.

	Strength (average)	Cases	Deaths	Incidence per 1,000	Mortality per 1,000
Non-inoculated ..	8,113	173	42	21·32 (± 1·08)	5·18 (± 0·54)
Inoculated ..	2,207	15	3	6·80 (± 1·18)	1·36 (± 0·53)

¹ The information in this table was obtained by Lieut.-Colonel W. B. Leishman, R.A.M.C., through the courtesy of the P.M.O., India.

Further statistical data have latterly been received from India in regard to anti-typhoid inoculation; these are summarised in Table IV. The information is only applicable to the first six months of the current year, and is supplied by the following stations, viz., Jhansi, Sialkot, Agra, Lucknow, Bangalore, Ahmednagar and Mhow. These collective figures again show a marked diminution in the incidence and mortality for enteric fever among the inoculated. These statistical data were specially collected by the medical officers at the stations named, and there is every reason to trust the correctness of the figures.

Table V. describes in tabular form the history of 9,471 men inoculated between the years 1897 to 1907 (March 1st). In column 1 this interval is divided into successive annual periods. The year March 1st, 1904, to February 28th, 1905, is, however, shown in two parts, in order to separate the period of inoculation by the older method—i.e., before October 1st, 1904—and the introduction of inoculation with vaccine prepared by the new method. Of the 9,471 inoculated men 112 subsequently contracted enteric fever. The years during which the disease was contracted and the

numbers attacked, are shown in successive columns of Table V. Of the total number (112) 57 contracted enteric fever within one year of inoculation, 17 over one and within two years, 10 over two and within three years, 11 over three and under four, 7 over four and under five, 4 over five and under six, 4 over six and under seven, and 2 over seven and under eight. It will thus be seen that over half of the total cases of enteric fever were contracted within the first year after inoculation, and that 95 out of the total 112 were attacked before the completion of their fourth year. These figures suggest an increased immunity in proportion to the length of interval after inoculation, but it must be remembered that the vast majority of the freshly inoculated are young soldiers, new

TABLE V.—TABLE SHOWING THE NUMBER OF MEN INOCULATED, BY YEARS, AND ALSO THE CASES OF ENTERIC FEVER THAT HAVE OCCURRED AMONGST THESE MEN, EITHER IN THE SAME YEAR OR ENSUING YEARS UP TO 1907.

Periods during which inoculation was carried out	No. of men inoculated	YEAR, AND NUMBER OF ATTACKS									Percentage of attack amongst men inoculated to numbers inoculated
		1900	1901	1902	1903	1904	1905	1906	1907	Total	
1897 (prior to 1.3.1897)	1	1	..	..	..	..	..	..	..	1	..
1. 3.1897 to 28.2.1898	2	..	..	..	..	..	..	..	..	..	..
1. 3.1898 to 28.2.1899	423	2	1	1	..	..	..	..	..	4	·94
1. 3.1899 to 29.2.1900	2,199	4	33	7	4	4	7	5	4	68	3·09
1. 3.1900 to 28.2.1901	512	..	11	2	..	1	..	..	..	14	2·73
1. 3.1901 to 28.2.1902	648	..	..	4	1	4	2	..	1	12	1·85
1. 3.1902 to 28.2.1903	159	..	..	..	1	..	3	..	2	6	3·77
1. 3.1903 to 29.2.1904	5	..	..	..	..	..	..	..	..	..	..
1. 3.1904 to 30.9.1904	1	..	..	..	..	..	..	..	..	..	..
1.10.1904 to 28.2.1905	8	..	..	..	..	..	..	..	..	..	..
1. 3.1905 to 28.2.1906	426	..	..	..	..	..	..	1	2	3	·70
1. 3.1906 to 28.2.1907	4,998	..	..	..	..	..	..	..	4	4	·08
Years not known	..	89	..	..	..	..	..	..	..	..	..
Total ..	9,471	7	45	14	6	9	12	6	13	112	1·18

arrivals in an area of infection, two important factors which are known to materially influence the susceptibility to enteric.

In regard to the 7 cases of enteric which occurred among those inoculated by the new method—*i.e.*, those inoculated after October 1st, 1904—we have the following particulars (*vide* Table VI.) :—Only 3 of these 7 cases received two doses of vaccine, the remainder undergoing one inoculation only. The intervals between the date of inoculation and the date of admission to hospital were 14, 34, 78, 86, 127, and 384 days, while for one case the date of admission to hospital is not given. The duration of the pyrexial attack for each case in the above order is given as 22, 29, 20, 12 and 10 days respectively, whereas no data have been submitted for the

case admitted to hospital 384 days after inoculation, beyond the information that he was seventy-two days under treatment. Four of these 7 cases recovered without a relapse, while 3 were still under treatment at the time of the submission of the return. Of the above 7 cases, those admitted to hospital 34, 78, and 127 days after inoculation had received double doses of vaccine, the others being inoculated with one dose only.

TABLE VI.—RETURN SHOWING THE NUMBER OF MEN INOCULATED BETWEEN OCTOBER 1ST, 1904, AND FEBRUARY 28TH, 1907; ALSO PARTICULARS OF THE CASES OF ENTERIC FEVER OCCURRING AMONGST THESE MEN.

Period	No. inoculated	PARTICULARS REGARDING EACH CASE OF ENTERIC FEVER							
		Place of attack	Date of attack	Dates of inoculation	Interval between inoculation and admission in days	Duration of pyrexia in days	Relapse	Result	Period in hospital in days
Oct. 1st, 1904, to Feb. 28th, 1905	8	—	—	—	—	—	—	—	—
Mar. 1st, 1905, to Feb. 28th, 1906	426	Saugor	3.10.06	15. 9.05	384	—	—	R.	72
		Peshawar Darjeeling	5. 1.06 (Not known)	11.10.05 1.12.05	86 —	12 —	—	R. R. ¹	—
Mar. 1st, 1906, to Feb. 28th, 1907	4,998	Pretoria	22.12.06	17. 8.06 31. 8.06	127	10	—	R.	64
		"	10. 2.07	24.11.06 8.12.06	78	20	—	—	—
		"	28.12.06	24.11.06 8.12.06	34	29	—	—	—
		Multan	21. 2.07	21. 2.07	14	22	—	—	—

¹ Mild attack.

Of the 112 total cases of enteric fever among the inoculated, 12 occurred in those who were inoculated with two doses of vaccine, the remainder having received a single dose only.

Relapses during the course of enteric attacks are recorded in 3 cases; in 47, statements are made to the effect that no relapse occurred; while for the remaining 62 no information has been furnished. An unique case—No. 12619, Private M. K., R.A.M.C.—gives a history of two enteric attacks after inoculation. He was inoculated on February 28th, 1900, while on the voyage to South Africa, and received but a single dose of vaccine. His first admission to hospital for enteric fever is dated May 25th, 1900, or 86 days after inoculation, and the second March 1st, 1904. He made a recovery from both attacks. No particulars as to dosage, &c., are, however, available.

Extracts, &c.

A PLAN OF CAMPAIGN AGAINST MALARIA.

BY LIEUTENANT-COLONEL S. WESTCOTT, C.M.G.
Royal Army Medical Corps.

I VENTURE to send details of a scheme which is being carried out at Mhow, India, in the hope that some point therein may, perhaps, be of use to others who have a like object in view. I should add that every officer and man in the garrison has attended lectures on malaria, and that this pamphlet has been widely circulated. As to surface drainage, the Royal Engineers and the Cantonment Committee have consented to throw it in with their other work during the season, as opportunity presents. The pamphlet is as follows :—

PREVENTION OF MALARIA.

Malaria or ague is caused by the transference of small animal parasites from infected to non-infected persons by means of the Anopheles mosquito. The Anopheles mosquito breeds in small pools of stagnant water of such size that they will not dry up before the ten days required for hatching. The appearance of malarial fevers coincides with that of the Anopheles in the rainy season. The first rain soaks into the ground and does not form pools which persist long enough for breeding; therefore, although the rains commence at Mhow in the latter part of June, the malarial season does not commence till August. Allowing ten days for the development of the mosquito and ten days for the multiplication of the malarial parasite after its introduction by means of the mosquito bite into the blood, this would bring us back to about July 10th as the actual commencement of the season. The season lasts practically for three months, reaching its climax in October; it rapidly declines during November, and is at the out-of-season level again in December.

Much has been done of late years to reduce malarial disease among the troops; for instance, in Mhow, the admission per 1,000 during the last three years has been 143, which, compared with those for the eight years previous, 434, is a reduction of two-thirds, but there is no reason why malaria should not be still further reduced in the garrison by preventive measures if all ranks will co-operate with the medical officers in the campaign.

The methods of prevention are :—

(1) By getting rid of mosquitoes. (2) By preventing mosquitoes from biting those who suffer from malaria. (3) By preventing mosquitoes, possibly fever-laden, from biting the healthy. (4) By killing the

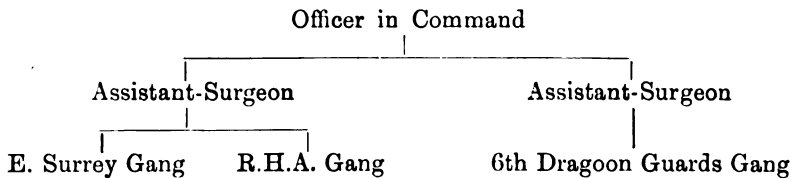
parasites in the blood of those who suffer from malaria. (5) By living at a distance from those who suffer from malaria.

It is to be hoped that all these methods will be adopted by commanding officers as far as they are practicable.

The best way of getting rid of mosquitoes is to kill them in their larval or tadpole stage in the small pools, and for this purpose a mosquito-brigade of soldiers and coolies, under the specialist in prevention of disease, will be organised as follows :—

MHOW MOSQUITO-BRIGADE.

The Brigade will be constituted as follows :—



A gang consists of two privates, two coolies and two *chokras*, and their equipment will be one pick and one shovel.

There will be two tours of duty daily, 8.30 to 12.30 and 1.30 to 5.30. A private will supervise one tour daily, taking the morning and afternoon gangs alternately. When not supervising, they will be employed in surveying. Each supervising private will be provided with a map of his district on which he will mark his work daily; every inch of the Cantonment will be surveyed systematically; work will commence to windward of habitations, as mosquitoes are borne in the direction of the wind.

The *chokras* are to hunt for larvæ and bring them to the laboratory for identification and record on the malarial map by different coloured flags according to the species. If they are malaria-bearing ones the pools in which they were found will be filled in. Disguised wells in which larvæ are found will be treated with larvicides, and their situation marked on the map. The plan will be to hunt for the *Anopheles* in the Cantonment and vicinity and then to fill up, drain, or pour kerosene and tar on the pools containing them; it is better to fill in pools, as this is a permanent cure.

Any one can recognise mosquito larvæ; their appearance can be studied at the laboratory at the Station Hospital by any who wishes to do so; and, if a report of discovery is sent to the Officer Commanding Mosquito-Brigade, Station Hospital, action will be taken.

All ponds which are large enough to support small fish should be stocked with them, as they feed on the larvæ.

The great majority of mosquitoes found in houses or barracks breed within 200 yards of them: the common house mosquito, or *Culex*, generally in the compound concerned or the one next to it, in old tins,

pails, flower-pots, garden ponds, &c., &c. The mosquito requires ten days to develop and must have water, so that if all stagnant water is discovered and thrown out once a week there can be no mosquitoes.

Keeping mosquitoes from infected persons:—The male *Anopheles* is a vegetable feeder; the female feeds on the blood of animals, including man; it, as a rule, feeds on them only at night; it enters houses after dark, and unless it has fed on man, leaves at sunrise. If it has fed on man, it lodges in undisturbed parts of the rooms, book shelves, cornices, curtains, &c., until it again requires food. The same mosquito may remain in a house for months, and, if it has fed on a person infected with malaria, may convey the disease to many other persons. Infected persons should, therefore, sleep under curtains.

There are several species of malarial parasites; two only are common in Mhow, the benign and the malignant tertian.

I propose to keep the malignant tertian patients isolated in hospital until the parasite is no longer to be found in the blood; if commanding officers would supply curtains for the benign tertian men in barracks (probably for about two months) the risk of spread would be lessened. I will send notice of such men three days before discharge, so that, if it is possible, curtains may be provided.

Protection of the healthy from mosquito bites:—The provision of mosquito curtains for all ranks is impracticable.

By killing the parasites in the blood:—Quinine does this, and, by keeping the blood quininised the parasites, should they be introduced by the mosquito, cannot develop, and so the fever is prevented. To keep the blood under the influence of quinine during the whole of the malarial season is the ideal method of prevention, but this will be impracticable as it involves a daily dose. The other method is to take a large dose (grs. 15) on two consecutive days of each week, in order that it may be in such concentration in the blood that the parasites, should they meanwhile have gained an entrance into the body and begun to multiply, are quickly killed, being in those stages of development most susceptible to its action; this is the method which has proved most successful and which officers commanding are recommended to adopt; it can be carried out without disturbing work by a company or similar organisation; the quinine in tablets will be supplied to officers commanding, and the Senior Medical Officer would like every dose ticked off on a nominal roll in a separate column—twenty-four columns being required for the season (two doses weekly for twelve weeks).

By living at a distance from those who suffer from malaria:—This is the difficulty and the danger; probably at least half of the native population, more especially the children, harbour the parasite, so the further the native houses are situated from the barracks and bungalows the better. Little can, I fear, be done under this section.

Translation.

REPORT ON THE WORK OF THE GERMAN EXPEDITION FOR THE INVESTIGATION OF SLEEPING SICKNESS. By Professor ROBERT KOCH.

Translated from the *Deutsche Medizinische Wochenschrift*, November 11th,
1907.

BY LIEUTENANT A. I. FORTESCUE.
Royal Army Medical Corps.

Sese, Entebbe, Uganda, April 25th, 1907.

SINCE the last report we have been chiefly concerned with the effect of atoxyl on the trypanosomes in the bodies of sleeping sickness patients, viewed from different standpoints.

For some time it had appeared as if serious cases might, to a great extent, be markedly improved by atoxyl, and that the trypanosomes in the lymph-glands could be made to disappear, at least in thirty days. As many of our patients had been under treatment for two or three months, the question next arose whether, as in the case of malaria, this period would be sufficient to banish the parasites completely. Just at this time, however, our supply of atoxyl became almost exhausted, and on this account we could only continue the treatment on a diminished scale. The following results were, however, arrived at :—

At first the improvement in the patients' condition made great strides, but after some weeks it came to a standstill. The enlarged lymph-glands, in which, as had been reported earlier, a distinct shrinkage was to be observed, diminished more and more in size, so that, four or five months after the commencement of the atoxyl treatment, only a few patients could be found whose glands were suitable for exploratory puncture; and, corresponding to the shrinkage of the glands, there occurred a disappearance of trypanosomes from the glands. During the injections of atoxyl, no trypanosomes were generally to be found on gland-puncture. But on stopping the treatment, the parasites reappeared, in several cases, at the earliest after eleven days. The number of these cases increased with the number of days that had elapsed, since the last injection of atoxyl, so that by twenty days after the last injection trypanosomes were found afresh in 25 per cent. of the cases examined. It appeared as if the action of atoxyl was merely transitory. But now an unexpected change occurred. The trypanosomes appeared from now onwards in fewer and fewer numbers the longer the period that had elapsed since the last injection, and from sixty days onwards in not a single case could trypanosomes be discovered in the glands. In most cases, as previously

stated, the glands had by this time so diminished in size as to be no longer suitable for puncture, but we were able to collect fifty-three cases which could be thus explored. In not a single one could trypanosomes be found. It was a striking fact that the diminution in size of the glands and the disappearance of the trypanosomes, seemed not to depend on the number of injections or on the duration of the treatment. The improvement occurred also in those cases which were not continuously treated, but had received only one single injection of 0.5 gramme of atoxyl. Such cases occurred not infrequently among our patients, as many of them were treated very irregularly, staying away after the first injection, which they did not like on account of the pain, and perhaps only appearing again after some months.

In a previous communication I have referred to the fact that many phenomena which come under observation during treatment by atoxyl, can only be explained by the assumption of an immunity resulting from the absorption of the dead trypanosomes. Similarly, the previously-mentioned regular shrinkage of the glands, and the complete disappearance of the trypanosomes even after a single injection, can only be well explained on this hypothesis. With regard to the glands, this immunity appears to last for a long time. At least, we saw no case in which trypanosomes were to be found in the glands after a longer interval than sixty days.

Under these circumstances the expectation was justified that, with the disappearance of the enlarged lymph-glands and their contained trypanosomes, the disease itself would abate and finally disappear. But this did not occur. As was described elsewhere, the improvement in the condition of the patients came to a standstill some time after the stoppage of the injections, and in some cases an unmistakable change for the worse occurred. Hence we must conclude that the cause of the disease (*i.e.*, the trypanosomes) has not yet been completely removed, but still lurks somewhere in the body. But how were we to prove this, as gland-puncture was no longer possible, and lumbar-puncture, to which one may turn as an alternative, could not be carried out in the case of our patients, who would have strongly objected? We can employ here only such methods of investigation as the natives will submit to with a good grace. There was nothing for it, then, but to return to blood-examination, which had previously given very unsatisfactory results. The difficulty in blood-examination lies in the fact that the trypanosomes are present in the blood almost always in very small numbers, and only appear fitfully, hence they cannot be found at every examination. Our previous want of success was due to our examining films containing too little blood; but when the blood is examined in a fairly thick layer, and with the assistance of a suitable staining medium, trypanosomes are seen, in the great majority of cases, at the first examination. If examinations are made at intervals of several days, trypanosomes are found eventually in every case.

Very frequent examinations are fortunately unnecessary. Of seventy-five cases of a series investigated, 40 per cent. gave a positive result at the first examination; 20 per cent. at the second examination; by the fifth examination almost every case gave a positive result, and only in two cases were seven and even eight examinations necessary for the discovery of the trypanosome. The procedure, if a large number of patients under treatment require to be examined, is extremely wearisome and tedious; but it gives, as we have stated, quite reliable results, and is the only means by which we can observe the course of the disease and the action of remedies on our clinical material. For rapid diagnosis gland-puncture, naturally, still remains the most reliable method.

By means of blood-examination the effect of atoxyl and other possible remedies, administered in various ways, was tested. While gland-puncture had shown no marked differences with regard to the number of injections of atoxyl, provided a sufficiently large dose was administered, blood-examination, on the contrary, made it evident that in this respect marked differences existed.

After a single injection of 0.5 gramme of atoxyl, the trypanosomes reappeared in the blood, in one case as early as five days, but after our systematic double doses (that is to say, one dose on two successive days) the blood remained free from trypanosomes for a much longer time after the stoppage of the remedy; and this was more noticeable the longer and the more regularly the treatment could be carried out. In some cases trypanosomes reappeared only after three or even four months. In a small number of cases, in spite of frequently repeated examinations, no trypanosomes at all have up to the present been found.

With the object of obtaining better and more lasting results, the treatment was altered, the dose being increased to 1.0 gramme of atoxyl (instead of the 0.5 gramme previously employed), injected at intervals of from seven to ten days. But in certain cases a symptom appeared which had not been previously observed either in untreated cases or in those which had not received a larger dose than 0.5 gramme. This was a blindness of both eyes, which developed in a relatively short time. At first we hoped that this symptom, like the others, would pass off, especially as a transitory blindness is frequently observed in patients in Europe after treatment by atoxyl. Unfortunately, in our patients no improvement occurred, and they became permanently blind. No change in the retinae of the affected eyes can be made out with the ophthalmoscope. Of course, as soon as we were convinced that the blindness was due to the atoxyl treatment, the large doses were stopped, and a return made to the previous 0.5-gramme doses.

It is specially to be noticed that the treatment with large doses of atoxyl, gave no better results with regard to the condition of the patients, than the use of moderate doses.

An attempt to administer 0.5-gramme doses of atoxyl over a longer

period soon showed that this treatment was too painful for the patients, and they refused to submit to it.

As it is very difficult to carry out subcutaneous injections over a long period in the case of natives, we made experiments with the internal administration of the drug. At first we gave atoxyl internally to a few patients only, and we soon proved that doses of 0·5 gramme atoxyl were very well borne and had the desired action on the trypanosomes in the blood. But when we extended our investigations to 150 cases, it soon appeared that 0·5-gramme doses were not efficacious; for in 30 per cent. of the cases so treated trypanosomes reappeared in the blood even during treatment. As larger doses, up to 1 gramme, produced, as in the case of subcutaneous injections, symptoms of poisoning, we had likewise to abandon this method of treatment, which would have greatly simplified the campaign against sleeping sickness.

As the new methods had not justified their employment, we were compelled to return to our original beaten track, and we treated our patients again with double doses of 0·5 gramme given at intervals of ten days. Even mild cases, who had previously been treated at longer intervals up to twenty days, now received a double injection every ten days. To be sure of results, this treatment will have to be carried on for a much longer period than in our first attempts. At the time of writing we have quite a large number of cases who have been undergoing this treatment for several months. Although many hundreds of blood-examinations have been made, in no case were trypanosomes found during treatment. From time to time we shall stop treatment in certain of these cases, and then, by means of frequent blood-examinations, prove whether they are still infected with trypanosomes.

In connection with the recent important discovery of Ehrlich—that in animals, during treatment by atoxyl, the trypanosomes develop a tolerance of the drug, the so-called atoxyl-immunity—our present investigations must sooner or later give us information. For if in the case of human beings, and in the method of treatment pursued by us, the trypanosomes become insensible to the action of atoxyl, then they must certainly reappear in the blood during treatment. But up to now, as we have said, this has not been observed in a single case. Also in our former researches, which were carried out partly (as in the internal treatment) with insufficient doses, we have received no hint of an acquired atoxyl-immunity (on the part of the trypanosomes). All the cases in whose blood trypanosomes appeared during treatment with insufficient doses, lost these at once and permanently, on the commencement of double injections of 0·5 gramme atoxyl.

Besides atoxyl, other remedies were tried by us, which had proved effective against trypanosomes in the case of animal experiments, or which, from their relation to arsenic, one might expect to have such an action.

First of all, arsenious acid in the form of sodium arsenate was tried, both subcutaneously and internally. Several patients received this drug in the maximum (pharmacopœial) dose, and even in still larger and repeated doses. As a result, an unmistakable action on the trypanosomes was observed, but this action was so much less marked than that of atoxyl that arsenious acid cannot be considered a substitute for the former drug.

Two arsenical preparations, H. Rosenberg's nucleogen and G. F. Boeringer's arsenferratin, had no distinct action on the trypanosomes, in spite of the small quantity of arsenic they contain.

With regard to staining-substances, we have tried up to the present trypanred (an improved preparation perfected by Ehrlich) and afridol-blue (di-chlor-benzine), manufactured by F. Bayer of Elberfeld. The subcutaneous administration of these drugs is very painful, and hence we could only give them in such doses that the pain was bearable; our patients would not submit to a frequent repetition of these injections. The action of these remedies was tested by means of gland-puncture. But whereas after 0.4 gramme atoxyl injected subcutaneously, the trypanosomes disappear from the lymph-glands after a few hours and remain away for a long time, they appear to be in no way affected by the injection of these stains. Although these remedies, alone or in combination with atoxyl, may give satisfactory results in the case of animals, to which much larger doses can be given, their administration to human beings, after our experience, cannot be effected so as to be beneficial.

In the vast number of blood-examinations which had to be carried out in the case of our patients, various other blood-parasites besides trypanosomes were met with, which excite a certain interest.

The most frequently found were *Filaria*, especially *Filaria perstans*. This parasite is so frequent, that on the islands and on the north-west shore of Victoria Nyanza there are scarcely any natives free from it. This makes it clear why earlier investigators have looked on *Filaria* as the cause of sleeping sickness. None of the symptoms which one would naturally have associated with *Filaria* were observed, even in the case of natives whose blood was swarming with the parasite. Elephantiasis, which elsewhere has been shown to depend on filariasis, does not occur here. It is generally accepted that *Filaria* infection occurs through the bites of mosquitoes. As almost the entire population here have *Filaria* in their blood, opportunities for inoculation must be very frequent and scarcely avoidable, and hence it was to be feared that the members of the expedition and the coast natives brought up with us, would become infected with filariasis, for it is impossible here to avoid mosquito bites completely. Up to now, however, fortunately, no such infection has occurred; also in the case of a missionary who has spent many years in

Uganda, and whose blood was examined for malaria, no *Filariæ* were found. It is worthy of note also, that *Filariæ* were absent from the blood of certain native chiefs. As all these persons are very frequently bitten by mosquitoes, we are brought to the conclusion that in this region, and as regards *F. perstans*, some other mode of transference must occur than that by mosquitoes.

Malarial parasites are also very frequent here. The number of cases in which malarial parasites were found varies, according to the locality from which the persons investigated came, from 20 per cent. to 50 per cent. In the vast majority of cases the parasites were those of æstivo-autumnal (tropical) fever. Quartan parasites were not infrequent, but tertian parasites, on the other hand, were met with only in a few cases. It was remarkable that the malarial parasites were not nearly so much affected by atoxyl as were the trypanosomes. The former appear to diminish in numbers, as in cases under treatment only a few parasites and gametes were found, but they were never totally banished. On the other hand, the trypanosomes were not markedly affected by quinine. Each remedy confined its specific action to one class of parasite.

Spirochætæ of tick fever were found less frequently than the two above-mentioned parasites, namely, in fourteen natives, of whom eleven were adults and three children. The adults had only scattered Spirochætæ in their blood and presented no striking symptom of disease; only in a few cases did the temperature rise for a short time above normal. But the disease behaved quite otherwise in the case of children. These were very ill for several days, attacks occurring at regular intervals, and what is specially noteworthy, they had numerous spirillæ in their blood, as is seen in European relapsing fever.

The occurrence of tick fever caused a search for ticks (*Ornithodoros*) to be undertaken, as these are known to be carriers of the spirochætæ. Ticks were discovered in various huts and even in the Mission-building itself. In the latter we caught six ticks, of which two were infected with spirochætæ. Originally this building was taken into consideration as a possible residence for us. It was, however, from the first regarded by me with suspicion, as certain of the rooms were used by natives. I therefore decided to place only our supplies in the Mission-building.

On the journey up-country we were able to visit both the frontier stations of the German East African Protectorate on the Victoria Nyanza, Shirati and Bukoba, and to make enquiries there as to the occurrence of sleeping sickness. These showed that at that time sleeping sickness was unknown at both stations, and accordingly I can affirm that up to that time the German territory on the Victoria Nyanza was free from the disease. This is now, however, no longer the case. Some weeks ago I received news that several suspicious cases of illness had been found in the district of Mageta, forty kilometres south-east of Shirati, at the source

of the river Shriria. Three of these cases were brought to Shirati, and samples of their blood examined. In the blood of two of these cases trypanosomes were found. Thus the presence of sleeping sickness in the Shirati region is established. If the focus of the disease turns out to be in the region at the source of the Shriria, so far distant from the shore of the Victoria Nyanza, it will be a very extraordinary occurrence. Should further enquiries, which I have directed to be made at Shirati, confirm these conjectures, an investigation on the spot itself will be necessary.

Sleeping sickness has also gained a firm footing in the Bukoba district, especially in the neighbourhood of Kisiba, close to the British frontier. During the last month, little by little, fifty-eight natives have arrived at Sese from this district, to be treated for sleeping sickness. In twenty-eight of these, trypanosomes were found. The rest came as boatmen and to attend to the sick. Of the twenty-eight cases, twenty-four were men and four women. The inhabitants of Kisiba are keen sailors, and make frequent voyages to Uganda and the islands of the Victoria Nyanza. Hence the sick men had all visited Uganda or the islands on previous occasions, and might have been infected there. But the four women had never left Kisiba, and could only have become infected at the latter place. The natives know *Glossina palpalis*, living specimens of which were shown them, very well, and they say that these flies occur in their district on the shores of the lake. In the various villages many cases of sleeping sickness are to be found. There can be no doubt that a focus of the disease, and apparently a very extensive one, has formed in Kisiba. Here also an investigation of the focus of the disease is required, and I intend to undertake this as soon as the rains are over.

Finally, I have to remark on the conclusion of an experiment, referred to in a previous communication (dated Muanza, July 31st, 1906). I refer to the island of Sijawanda, near Muanza, on which numerous *Glossina* occur. This island was to be made partially *Glossina*-free, by clearing the jungle on it. The clearing went on slowly, as only a few woodcutters were at our disposal. Hence, on the departure of the expedition from Muanza, the experiment was not yet completed, and I requested Senior-Surgeon Radloff, of Muanza, to watch developments, which he has done in the most praiseworthy manner. On December 14th, 1906, he informed me that the island had been cleared, with the exception of a small section of one valley, which retained its vegetation. There remained also at one part of the shore, some ambatch bushes growing in the water. After this Dr. Radloff again visited the island, and established the fact that *Glossina* were never to be found in the cleared portion. On the other hand, there were a few among the ambatch bushes, and many in the uncleared patch. The experiment was, therefore, a complete success, and teaches the lesson that *Glossina* are easily got rid of wherever they

occur. Besides, clearing the jungle is not a costly undertaking. A large quantity of wood-fuel is required by the Lake steamers, and in our experiment the working cost might have easily been more than covered by eventually selling the cut wood for fuel at a fixed rate.

SESE, September 5th, 1907.

From Kisiba I have received news that up to the end of August, 365 cases of sleeping sickness had been treated. These came, almost all, from the Sultanate of Kisiba, while from the neighbouring Sultanate of Bugaba, where we had come across many cases during our march through the country, only a few cases had come in. As soon as Staff-Surgeon Kudicke has received a hospital assistant, which it has not yet been possible to arrange, he intends to go himself to Bugaba to look for cases and bring them into camp at Kigarama. Should he discover, however, that the people of Bugaba are very unwilling to leave their country, then arrangements will be made to form a sick camp in Bugaba, and provide it with a medical officer.

All attempts to discover *G. palpalis* in that part of Kisiba where sleeping sickness specially rages have been unsuccessful, and it may now be taken as established that in this region this fly does not occur. Moreover, it has again been definitely proved that the cases of the disease have been infected, not in Kisiba, but in Uganda, where the patients had resided for long periods. The only exceptions are certain women, whose number up to now totals 15. These have never left Kisiba, and can only there have acquired the germs of the disease. Now, however, it is further known that all these women are married, and that their husbands either have died of sleeping sickness, or, if they survive, suffer from that disease. Especially important for the explanation of the occurrence of sleeping sickness among married women is the fact that one man with trypanosomiasis has three wives, and all three have now been proved to suffer from the disease. One of them is already very ill. Hence we must conclude that in this case infection can only have occurred by sexual intercourse. The same holds good also for the other women; for if the disease in Kisiba were transferred from the sick to the healthy by any other agency, e.g., blood-sucking insects, then it would not be exclusively women married to husbands with trypanosomiasis who would be affected, but likewise the wives of healthy husbands, unmarried women, children and old people, who all live in close contact with the infected.

The conditions in Kisiba, where there are many cases of sleeping sickness, but few *Glossinæ*, are specially and unusually instructive with regard to the question of whether the disease can be transferred by other means than *Glossina palpalis*. Kisiba is very rich in blood-sucking insects; mosquitoes of various species, *Stomoxys* and *Tabanus*, are represented, besides ticks (including *Ornithodoros*) which infest human beings, and yet not a single case can be traced in which infection might have been

due to such agency. With regard to infection by sexual intercourse, we may observe that in another trypanosome disease, dourine, this is the only way in which infection occurs.

On an excursion to the Buninga peninsula I chanced to come across a camp of rubber-collectors, consisting of eighteen natives, with an overseer. Of these, fifteen men came from German Kisiba. From these people I learnt that in Buninga alone there are seven such camps, with eighty to one hundred men from Kisiba. As the rubber is procured from the sap of the rubber-creeper (*Landolphia*) growing in the virgin forests on the shores of the Victoria Nyanza, where likewise *Glossina palpalis* occurs in large numbers, the rubber-collectors are specially exposed to infection. These people furnished the earliest victims of sleeping sickness, and after these had died off, rubber-collecting had for a long time ceased, as, in spite of excellent pay, no one was willing to undertake so dangerous an occupation. But now, apparently, people have been found, especially in German Kisiba, who, in ignorance of the danger, allowed themselves to be employed, and, like the earlier collectors, have fallen victims to the disease. When I examined the rubber-collectors I found several who already presented marked signs of infection. In a short time they become too weak to work any longer. They then return home, and others, attracted by the high rate of pay, arrive in their stead. We learn from this incident how there come to be so many cases of sleeping sickness in Kisiba.

In Shirati at present Staff-Surgeon Feldmann and Senior-Surgeon Breuer are busy in the campaign against sleeping sickness. The former wrote to me a short time ago that up to August 6th, 143 cases had been seen at the station of Shirati, and that if reports of the disease continued to come in as they were doing, the number of a hundred would soon be reached. He had on this account been induced to form a sick-camp similar to that at Kisiba, the management of which will fall chiefly to Senior-Surgeon Breuer. Staff-Surgeon Feldmann will later on visit the southern part of the Shirati region, especially the neighbourhood of the Mori and Mara estuaries, in order to confirm the spread of the disease into these parts. As the total of sick is now considerably higher than I stated in my previous communication, and will be still further increased when the whole region is presently searched for cases, it is necessary that a surgeon and a hospital-assistant should be stationed permanently at Shirati.

The investigation was continued of substances which have proved antagonistic to trypanosomes in animal experiments, and can hence be discussed as substitutes for or adjuvants of atoxyl.

Besides afridol-blue (di-chlor-benzidine) from the factory of F. Bayer and Co., Elberfeld, to which I have previously referred, afridol-violet (diamidodiphenylurea-hydrate), a preparation of the same firm, was

also tested. This, however, was not found to have any marked action on the trypanosomes, even when administered in the largest doses that could safely be given.

Two other preparations were then investigated, supplied, on the recommendation of Privy-Councillor Ehrlich, from the factory of L. Casella and Co., Frankfort. These were pararosanilin-oleate and para-fuchsin-acetate. Both drugs were given internally, as, according to earlier experiments, subcutaneous injection would not have been tolerated over a long period. In doses of 0.5 grammes daily, pararosanilin-oleate was well borne; even a full gramme could be administered. The fuchsin preparation, on the contrary, even in 0.5 gramme doses, caused some patients such discomfort (gastralgia and vomiting) that it had to be discontinued. Only a few patients tolerated gramme doses. The preparations were given, as far as possible, in daily doses for a fortnight, and the blood simultaneously examined for trypanosomes; whereby it appeared that trypanosomes were frequently to be met with in the blood, even during the treatment, which never happened in the case of atoxyl. Finally, gland-puncture was likewise performed, and trypanosomes found there also. Hence a marked action on the trypanosomes could not be proved. If, in the case of animal experiments, the preparations have a marked action, the explanation lies in the fact that one can give far larger doses to animals than to man. These drugs are not suitable for use as a substitute for atoxyl in the treatment of sleeping sickness.

In connection with the blindness mentioned in my previous communication, which might occur in the course of treatment by atoxyl, I observe that this has not taken place since we returned to 0.5-gramme doses. Hence it clearly appears that these accidents are actually due to the atoxyl treatment. Altogether we have observed twenty-two cases of blindness, which will be described in the detailed report, especially with regard to the duration of the treatment and the dosage of the remedy.

By our previous investigations it was established that a course of atoxyl, lasting two months, had a powerful action, the clinical symptoms being markedly improved and the trypanosomes banished; but that this length of treatment was insufficient, because in the majority of cases the trypanosomes reappeared, though perhaps for the first time after some months, and at long intervals. Hence it was necessary to discover whether atoxyl treatment of longer duration would meet with better success. With this object it was attempted to treat the patients regularly throughout a longer period. In no case, however, has it been possible exactly to carry out this procedure, for the natives, though very interested in every sort of medical treatment, possess no endurance. As soon as they feel at all better, or if the treatment is prolonged and becomes wearisome to them, they break it off and run away. Very many of our patients who had come from outlying districts insisted on leaving

prematurely, either because their farms could not be left longer uncared for, or because the treatment exhausted their patience. In this connection must of course be considered the possibility of the people returning to the spot where they first took ill, and perhaps being re-infected there. We could do nothing to prevent this, as, of course, we wished never to put any compulsion on the people, and, indeed, could not do so under existing conditions. The circumstances will, however, be quite altered when it becomes worth while to combat sleeping sickness administratively. One will then have to insist on an adequate course of atoxyl-treatment in the interests of the patients themselves.

But if our material for observation leaves something to be desired in the matter of individual cases, yet this deficiency is to some extent counterbalanced by the vast number of observations we have to draw on, and from this vast accumulation of material the following facts may be gathered.

In cases of sleeping sickness treated with atoxyl by our method, trypanosomes never appear in the blood during treatment, even if the latter continues for ten months. Further researches must tell us how much longer this period is likely to last. In no case, during the period of observation, has any indication appeared of a tolerance of atoxyl by the trypanosomes, and the so-called "atoxyl-immunity," which had been observed in animal experiments, has not been confirmed by the methods of treatment employed by us in the case of human beings. We have succeeded, then, in keeping trypanosomiasis patients free from trypanosomes, as regards their blood, and thereby preventing them from infecting *Glossinæ* and so spreading the disease; that is to say, we have rendered them harmless. This property of atoxyl would alone be sufficient to warrant the drug being employed in the campaign against sleeping sickness. But what is even more important is that after the cessation of treatment by atoxyl trypanosomes are sure, after a longer or shorter period, to reappear in the blood in a certain number of cases. But the longer and the more systematically the treatment is carried out, and the earlier in the disease it is commenced, the smaller becomes the number of cases which are not completely freed from the trypanosomes. The best results will be obtained in slight cases, and one can confidently assert that the vast majority of these will be lastingly freed from trypanosomes by a four to six months' course of treatment, and, from their not presenting a single symptom of the disease, one may consider them completely cured. Less successful results are obtained in severe cases. Even among these there occur not a few cases which apparently remain stationary during a course of atoxyl, and whose condition remained unchanged during the period we were able to observe them. But others have undergone a relapse after the cessation of the treatment, and many

who considered themselves already cured, and hence had abandoned the treatment too early, have died. Further reflections on the significance of the course and number of our observations, I must reserve for a future communication. I must, however, briefly refer here to some figures relating to the mortality in untreated cases and in cases treated with atoxyl, as these are the best means of demonstrating the beneficial action of the drug.

In the Mission station of Bumanga, with a daily average figure of 20 cases of sleeping sickness, 212 deaths occurred in four years; that is to say, with a daily average of 100 sick there would be 265 deaths in one year. In the Mission-station of Kisiba, with a daily average of 80 sick, 687 cases died in three years. Thus, with a daily average of 100 cases, 287 would have died annually. The mortality was almost the same at both stations. It is not the case that the mortality figure was at first lower, and rose in consequence of an increase in the number of cases, for even in the first year of observation 52 deaths occurred, a figure almost exactly corresponding with the yearly average. These high mortality figures mean that cases of sleeping sickness, at the stage in which they come to hospital, have on an average only four or five months to live, and in fact at both stations before atoxyl-treatment was employed, every case died, with the exception of a very few in which diagnosis was not confirmed.

The number of cases treated by us reaches 1,633; of these in the course of ten months 131 have died, *i.e.*, 8 per cent. Our sickness material differs, however, from that of the mission-stations, in that among our patients there occur a large number of slight cases. If, however, we confine our attention exclusively to our severe cases, then among 374 we find a mortality of 78, *i.e.*, 22.9 per cent. Among these are included cases quite insufficiently treated, who have received only one or a few injections of atoxyl. If we ignored these the mortality would be only half as high. The mortality among serious cases treated by us with atoxyl, does not reach the tenth or perhaps even the twentieth part of that among serious cases not so treated. Hence it follows with certainty that, by suitable treatment with atoxyl, the lives of many cases of sleeping sickness can be saved.

It is quite possible that in the course of time other remedies may be discovered more efficacious than, and substitutes for, atoxyl. Yet atoxyl, if by no means an infallible cure, is so powerful a weapon in the campaign against sleeping sickness that one must employ it whenever possible.

As the result of our experiences the campaign against sleeping sickness will be carried out in the following way:—

The first thing is to erect standing camps to which the sick will be brought. The number of these depends on the number of sick that occur,

and further on the distances to be traversed in looking for and transporting the sick.

The camp must be situated not too far from inhabited places, so that treatment of the sick is not attended with great difficulties, and especially it must be erected in a locality free from Glossinæ. It must be placed under the direction of a medical man, who must have at his disposal the latest European methods of treatment. We must not expect all the sick to come for treatment of their own accord. They must be sought for, and it is specially important to discover those in the early stages of the disease, who do not feel ill, go about everywhere, and so are admirably adapted for sowing the sickness broadcast. For this purpose it is not sufficient to investigate suspicious cases of enlarged glands; blood examinations must also be made according to the very accurate method followed by us. The following example shows how important is this latter point.

We examined fifty-two powerful young men, boatmen who had made the voyage from Entebbe to Sese, and had thus rowed almost continuously for twelve-and-a-half hours. They considered themselves perfectly well, and, as far as their appearance went, looked quite healthy. Eleven of them had more or less enlarged cervical lymph-glands. On a single blood-examination we discovered that seven had trypanosomes in their blood, five of whom had enlarged and two normal glands. According to our experience, a single blood-examination discovers perhaps 50 per cent. of the actual trypanosome-carriers, and it is probable that in this case also repeated examinations would have revealed double the number of infected persons; that is to say, ten trypanosome-carriers with enlarged and four with normal glands. We may note in passing that, of these fifty-two apparently healthy people, forty-seven had *Filaria perstans*, twenty-six malarial parasites, and two Spirochætæ of tick fever in their blood, and this in the apparently healthy population of this region.

Besides, these are not the only cases of trypanosome-carriers with normal lymph-glands that I have come across. Such people are not infrequently met with, and hence it would be useless, as I said before, to base our anti-sleeping-sickness measures exclusively on the discovery of enlarged lymph-glands.

All patients collected in a camp ought to undergo a regular course of atoxyl treatment lasting at least four months. Should a more powerful remedy than atoxyl be found, the latter will be superseded. Nothing in the general plan here laid down will thereby be altered. On the termination of the treatment, the permanent disappearance of the trypanosomes must be made certain by repeated blood-examinations. The patients must remain in the camp till we can be sure that, in the places where these people have their homes, the Glossinæ have become free from infection by the removal of all trypanosome-carriers. On this point at present we, unfortunately, know nothing; but it will not be difficult in

the course of time to collect statistics from which the duration of the period in question can be estimated. At present I should consider one year, and where possible two years, necessary for this disappearance of infectivity.

The erection of camps holds good for all places where sleeping sickness occurs. But there are other measures to be considered which vary with the local conditions. To prevent the spread of sleeping sickness from infected areas we require limitation of intercourse, frontier barriers, international agreements. In Kisiba, where almost all the cases have come from Uganda, this will be the most necessary line of action. But this also applies in part to the Shirati region, with regard to the slipping in of cases from the neighbouring British territory, and to Tanganyika, on account of immigration from the Congo Free State, which plays an important part in infection, according to Dr. Feldmann's report.

In districts where there is a small population scattered over a Glossina-infected area, the transference of the people to a Glossina-free region will be the simplest means of saving them from sleeping sickness. This procedure will undoubtedly be the most expedient for the thinly-populated coast-strip west of Shirati.

At other places it will be advisable to drive away the Glossinæ by clearing the jungle from the places they frequent. But this procedure will always have only a very limited application. It will, for example, be carried out, as has been arranged at Shirati, along the lake shore, in the neighbourhood of the station, where numerous Glossinæ have been found.

We can also effect something against the Glossinæ, in the way of cutting off their regular food-supply. These insects require, every two or three days, to gorge themselves with the blood of some vertebrate. One can easily discover where this blood comes from, by examining their stomach-contents. In this way we have established the fact that, on the shores of the Victoria Nyanza, the Glossinæ live almost solely on the blood of crocodiles. One would therefore greatly diminish the possibility of the Glossinæ existing, if one were to exterminate the crocodiles, or greatly reduce their numbers; and this is not difficult if one directs one's energies to preventing them from multiplying. The crocodiles have certain well-recognised breeding-grounds to which they always resort, time after time. The natives know these places, and can be induced to collect and bring in the crocodile eggs. In former times, as I have learnt, this was actually carried out along the German shore of the Victoria Nyanza, but has now been given up for some unknown reason. It seems to me very reasonable to resume the destruction of crocodile eggs.

At those places where Glossinæ are constantly biting human beings, and consequently derive their nourishment from this source—for example

at the places for drawing water, which are often found on the lake-shore in the neighbourhood of villages, or at places where the native boats frequently touch, at much-used fords on the rivers, &c.—the *Glossina* can be driven away by clearing the jungle as far as possible.

Already, in German East Africa, sleeping sickness is being vigorously combated according to the principles here laid down.

In this connection, up to now, three regions in which sleeping sickness has appeared to a large extent come under consideration—Kisiba, Shirati, and Tanganyika. Already, in Kisiba and Shirati, sleeping-sickness camps have been established and provided with medical men, fully instructed in sleeping sickness and its treatment and prevention, under my guidance; and Staff-Surgeon Kudicke is now established at Kisiba, and Senior-Surgeon Breuer at Shirati. Staff-Surgeon Feldmann will undertake the combating of sleeping sickness in Tanganyika, and he will proceed there as soon as he has received the necessary equipment from the Imperial Government at Dar-es-Salaam. A subordinate sanitary officer will have to be sent to assist each of these officers. I also consider it very advisable to provide each of these stations with two medical officers, especially at first, when there is a great deal of work to do, so that the work may not come to a standstill should one of them go sick; partly, also, that in this way fresh medical officers may be trained, and that, in the case of more stations requiring to be formed, we may have suitable medical officers at our disposal. I consider it certain that in Tanganyika, on account of the great extent of the focus of the disease, a single station will be insufficient. Further, it is to be feared that by a possible spread of the disease into the region south of Shirati, the large island of Ukerewe will become infected. On this island, which has a population of about 30,000 natives, *Glossina palpalis* occurs in the woods along the shore, and it is thus admirably adapted by nature to become a focus of sleeping sickness. The island must be visited from Shirati from time to time, and the disease searched for. But this cannot be carried out by a single medical officer at Shirati, who has abundance of work in the inspection of the widely-extended coast-line, and of the estuaries of the Mori and Mara rivers; further assistants are required for this purpose.

Since, as I assume, everything that can be done under existing conditions to combat sleeping sickness in German East Africa, is in a fair way to be achieved, I consider that the object of the expedition has been accomplished. I shall make arrangements for the completion of the work still in hand by the beginning of October, and on October 14th I shall sail from Mombasa for home.



Reviews.

BLOOD STAINS. By Major W. D. Sutherland, I.M.S. London: Baillière, Tindall and Cox. Price 10s. 6d. nett.

The importance of the recognition of the nature of stains, on clothing and other articles, is so generally acknowledged in criminal trials, that it is a matter of wonder that a book containing a summary of the present position of scientific knowledge on the subject has not appeared before. Even in the medical profession the knowledge of the subject has been very vague, except among the few experts who have devoted their attention to the differentiation of the stains of human blood from that of animals. Yet, at any moment, a medical man might find himself confronted with the necessity for such a diagnosis, with a certainty of having to substantiate his opinions in a Court of Law, till now without the aid of any text-book to support him in giving or refusing an opinion.

Major Sutherland's book embodies the result of an enormous amount of labour (the references alone amount to 336) and, as a book of reference, should be of incalculable value, both for the purpose of standardising procedure in such work and of encouraging further researches by indicating the lines on which success and failure have been arrived at in the past. In the first chapters the older tests are dealt with; in the first the methods of dissolving the stains are discussed, while in the second an old friend, the guaiacum test, receives its death blow.

The third chapter deals with Teichmann's test for the formation of crystals of hæmatin chloride, the merits and the demerits of the test being discussed. The spectroscopic examination of blood is treated of in the fourth chapter, while the fifth is a summary of the attempts made to distinguish human blood from that of other mammals and birds, by means of microscopic differences in the blood constituents.

The remaining chapters are devoted to the discussion of the latest scientific advance, that is to say, "Serology." We know the more or less specific actions of the various antisera on the substances whose invasion has produced them in the blood, particularly in regard to the fact that the injection of blood corpuscles of one animal into the bloodstream of another, if not nearly allied, causes the development of an antiserum, possessing agglutinating and hæmolytic powers when in contact with the blood of the first. We are, therefore, lead to believe that the diagnosis of the human blood stains by means of the reaction with the blood of an animal resistant to it may be possible. The fallacies of the agglutination and hæmolytic tests are, however, set forth, and these tests are discounted by the author, who pins his faith on the less known reaction of the production of precipitins, when the serum of an animal, resistant to human blood, is added to the extract of the stain, and supports his contention with numerous examples. The processes described are, however, of such a special nature that they can only come within the reach of members of the profession who have the time and the

means to make a special study of serology, and are consequently impossible to the profession at large.

From the perusal of Major Sutherland's book our present position may be summarised in a few words. With such a text-book available for the Medical Profession, Bench and Bar, no opinion on a blood stain could hold its own unless based on the precipitin reaction, and even then, to quote from a reference in the text, "For an expert blood examination we must have a serum with the State's guarantee of its fitness for use, and a skilled operator." The determination of the characters of a blood stain is, therefore, lifted far above the heads of the medical profession in general, a circumstance which should cause the book to be received with a sigh of relief, especially when it is discovered that a complete understanding of Ehrlich's side chain theory and other abstruse physiological problems is not absolutely necessary for a successful medical career.

C. F. W.

TEXT BOOK OF ORGANIC CHEMISTRY FOR MEDICAL STUDENTS. By G. v. Bunge, Professor of Physiological Chemistry in the University of Basle. Translated with additions by R. H. Aders Plimmer, D.Sc. London, Assistant Professor of Physiological Chemistry and Fellow of University College, London. Published by Longmans, Green and Co., 39, Paternoster Row, London, 1907.

This book consists of a translation of Professor Bunge's lectures on physiological chemistry, adapted to the needs of English medical students and enlarged by the additions of the translator. The facts are recited in a clear and comprehensive manner and are consequently easy to follow, while the aim of the book being to deal with the composition and properties of substances met with in medical practice, the matter for study is simplified by the omission of facts having no bearing on the subject.

The chapters on the synthesis of complex animal and vegetable compounds is intensely interesting, and the origin and process of formation of well known materials is set out in such manner that one's attention is rivetted throughout. The recital of bald facts and the stringing of numbers of equations, is avoided as much as possible, the relations between the methods adopted by the chemist and those found in Nature are detailed and explained.

For the reasons given above the book is eminently adapted to the needs of medical students, as well as to those of qualified members of the profession who wish to renew their acquaintance with the subject.

C. F. W.

ABEL'S LABORATORY HANDBOOK OF BACTERIOLOGY. Translated from the Tenth German Edition by M. H. Gordon. Hodder and Stoughton, pp. 224, price 5s. net.

This is a very excellent little handbook for laboratory use; the descriptions of the methods are short but sufficient to work on. For those who wish for fuller information on particular points references are given in the text. The book is very "up-to-date," and should be found very useful by workers in bacteriology.

W. S. H.

WHO'S WHO YEAR-BOOK, 1907. Messrs. Adam and Charles Black, Soho Square, London, W. Price 1s. net.

This useful book of reference gives a great deal of information in a small space. It is made up of tables which formerly appeared in "Who's Who." Some new tables have been added, such as a list of race meetings with dates of their fixtures and names of the clerks of the course, a table of London theatres with their lessees and managers, the degrees and colours of hoods of the various universities, &c., &c.

THE QUARTERLY JOURNAL OF MEDICINE. Clarendon Press. Price 8s. 6d. net. Vol. I., No. 1.

This is the first number of what promises to be the standard periodical on scientific medicine in the country. It is edited by Drs. Osler, Rose Bradford, Garrod, Hutchison, Rolleston and Hale White. It contains 108 pp. of printed matter, with numerous admirable plates. The contents are thirteen original articles, all by well-known authorities. Among these we note specially an article on Muscular Lesions in Sprue, by Dr. Byrom Bramwell. Two cases of this terrible disease are fully described, and the results of *post-mortem* examination recorded by Professor R. Muir. We quote the following from Dr. Bramwell's article: "I consider that the microscopic appearances of the muscle indicate that its substance was undergoing degeneration as the result of the action of some toxic substance in the blood, possibly absorbed from the intestine; and that this degeneration was followed by proliferation and remarkable enlargement of the sarcolemma nuclei, these acting, in fact, as phagocytes and absorbing the muscle substance." A. F.

Current Literature.

Transport of Wounded on Bicycles (*Archives de Médecine et de Pharmacie Militaires*, March, 1907).—A report on this subject has been made under War Office order by Médecin-Major Leguelinel de Lignerolles, who is in medical charge of the 4th Battalion of Chasseurs-à-pied, to which a cyclist company is attached.

In the French Army pack animals form a considerable proportion of the means of transport from the regimental first aid stations to the dressing station of the field ambulance, but it is questionable whether these will always be available. For example, it is said that only four, instead of the regulation number of 80, will be available for the medical units of the 20th Army Corps. De Lignerolles, in making experiments on cycle transport during army medical manœuvres of this army corps in 1906, had bicycles specially fitted to carry stretchers, and also made a modification

of Bonette's wheeled bicycle litter (*brancard roulant*) described in *Le Caducée* of May 5th, 1906.

The report describes the method of carrying a stretcher between two bicycles, forming a four-wheeled conveyance, of which the stretcher becomes the body. The stretcher is easily detached when the journey is accomplished, and the bicycles are set free to return for another stretcher with wounded. In this manner considerable time is saved, as compared with the method of carrying stretchers with bearers.

The wheeled bicycle litter, modifying Bonette's, is an ingenious arrangement by which the front wheels only of two similar bicycles are removed, when required, and fixed parallel to one another, so as to support the stretcher in the form of a wheeled litter, pushed by one man.

The practical value of such methods of removing wounded to dressing stations and field hospitals is considerable, and merits extensive study and experiment.

W. G. M.

The Prevention of "Flat Foot," with Special Reference to Fitness for Military Service.—There is an article on this subject by Dr. Gustave Muskat, Berlin, in the *Deutsche Militärärztliche Zeitschrift* of August 20th, 1907. He deals with it from a hygienic point of view, and notes the fact, now well recognised in Germany, that military service must be the school of hygiene for the whole nation.

The subject has an important bearing on the efficiency of the soldier, and on the admissions into hospital for footsores. In the German Army there has been a progressive decrease in these injuries from 35.1 per 1,000 of strength in the five years 1882-86, to 10.8 per 1,000 in 1904. In war the inefficiency from this cause has been great. In 1870, 5 per cent. of the German Army were, at one time or another, inefficient on account of footsores. In the American Civil War more than half the strength of one of the army corps of the North was laid up fourteen days after taking the field from this cause. The Swiss Army of Observation, in the war of 1870-71, was so affected that a special instruction had to be issued for the prevention of footsores. Ten per cent. of the Austrian Army of Occupation in Bosnia in 1878 suffered from footsores. A considerable number of these cases was due to flat foot, according to Dr. Muskat, and he notes that many men have to be invalided from the army on account of flat feet shortly after enlistment.

In Germany it is calculated that 26 per cent. of the reserves for enlistment have flat feet. Amongst the population generally 4.3 per cent. of the cases of flat feet are congenital, and 95.7 per cent. acquired. Of the acquired cases, 4.9 per cent. are traumatic, 3.1 paralytic, and 88.9 per cent. are due to static causes. They are twice as frequent amongst men as amongst women, and most common between the ages of 16 and 20.

Dr. Muskat attributes the acquired cases partly to the wearing of stockings and boots that interfere with the natural arch of the foot, and partly, in the case of those who do their work barefoot, to erroneous methods of placing the foot in walking, by which the loads carried break down the natural arch.

The article concludes with some statistics that are intended to emphasise the importance of the subject. Thus in Germany, from 1893 to 1905, 23.3 per 1,000 of the recruits were rejected as unfit for service

except in the territorial army (*Landsturm*), on account of flat foot, and 3·8 per 1,000 were rejected as unfit for any service. Roughly, for every 500,000 men passed as fit, 10,000 were rejected as unfit on account of flat foot. In Austria the rejections amounted to 33·4 per 1,000, in Switzerland to 33·5. The rejections are apparently much lower in France, England and Denmark.

The article is illustrated with the usual pictures of the formation of the foot, but this is merely a repetition of what has been recognised and practically dealt with in the British Army for many years. W. G. M.

Changes in Urinary Excretions under the Influence of Route Marching.—Pharmacien-principal Roeser and Med. Major Dettling have an article on the above subject in the *Archives de Médecine et de Pharmacie Militaires* for July, 1907.

After a concise review of similar physiological experiments made by others, they describe experiments made by them on a young soldier, who volunteered for the purpose. His age was 18½ years, and he was apparently in perfect health, without any predisposition to disease.

Two marches were made at an interval of three weeks, the first on July 9th and the second on July 30th, 1904. Full field equipment was carried, and the road was practically level. The first march was in dull, moist, warm weather, and the second in clear and dry weather. The distance in the former was 22½ kilometres, done in 4 hours 50 minutes, and in the latter 31½ kilometres, done in 6 hours 20 minutes. The weight carried was 26·95 and 26·80 kilogrammes. Morning coffee was taken half an hour before the march, which commenced at 6.20 a.m. on the first, and 5 a.m. on the second day. Nothing else was taken, except 750 grammes of water, during the second march, but on both occasions breakfast was taken half an hour before the end of the march, which took place at 11.10 a.m. on the first and 11.20 a.m. on the second day. There was a rest of twenty minutes in each hour of the march.

Body temperature, pulse, and arterial pressure were noted at the commencement and at the end of the second march. Pulse only was observed in connection with the first march. The observations were as follows:—

				Temperature	Pulse.	Arterial pressure
First march.	At commencement	..	..	..	66	
	At end	..	..	..	136	
Second march.	At commencement	..	..	37·3° C.	76	17 c.m.
	At end	..	..	38·6° C.	116	15·5 „

The urine was examined every four hours night and day before the march, the day of the march, the day after, and the second day after the march. The examination included observations on reaction, density, volume, residue (total, organic and mineral), total nitrogen, urea, xanthuric constituents, chloride of sodium, and sediment. The variations in these are shown in graphic charts and fully detailed.

The conclusions which the authors draw from their experiments are: (1) Route marching and similar exercises change the character, quantity, and quality of urine. (2) The extent and duration of these changes depend on atmospheric conditions, the duration of the march and weight carried, and the condition of the individual as regards degree of fitness or fatigue. (3) Acid reaction increases after the march and continues for thirty-six hours. It is due to the elimination of lactic acid by the urine. (4) Sediment is more abundant on the day of the march and on the day after; it is at its maximum twelve to twenty-four hours after the march. (5) Density is greatest in the hours succeeding the march. (6) Volume for twenty-four hours is least on the day after the march, but it is in reality at the end of the march that the quantity excreted is least. Volume varies with perspiration, arterial tension, and quantity of liquids taken during and after the march. (7) Total and organic residue is greatest on the day of the march, falls on the day after, and becomes greater again on the second day after the march. (8) Mineral residue, on the contrary, diminishes on the day of the march and the day following, regaining its normal on the second day after the march. (9) Total nitrogen undergoes the same modifications as organic residue. (10) Chloride of sodium diminishes considerably by the end of the march, and remains below normal until the second day after. (11) A march of 31½ kilometres with the full field equipment, although causing a considerable amount of fatigue and changes in the normal urinary constituents, did not cause any abnormal secretion such as albumen or sugar.

W. G. M.

The Employment of Non-pathogenic Spore-bearing Micro-organisms in Testing Methods of Disinfection.—Stabsarzt Dr. Hoffmann, in the *Deutsche Militärärztliche Zeitschrift* of August 20th, 1907, draws attention to the risks of using pathogenic organisms for testing disinfecting apparatus, and shows that the resistance of their spores varies according to time and other conditions. The risk is especially great in the cases where anthrax bacilli are used for testing disinfecting apparatus which may be used subsequently for sterilising dressings. He advocates the use of certain non-pathogenic spores from garden soil or saprophytic spore-bearing organisms.

The subject has been considered by the medical department in the German War Office, and a series of instructions were issued in May, 1907, for testing steam disinfecting apparatus in military hospitals and garrisons. These tests are to be made at least once every year by medical and intendants officials. Non-pathogenic spore-bearing material is forwarded for the purpose from the laboratory of the Army Medical School in Berlin.

W. G. M.

The New First Field Dressing of the German Army.—(From the *Archives de Médecine et de Pharmacie Militaires*, July, 1907, p. 82). The weight of the new dressing is twenty-five grammes, and it measures 7.4 c.m. by 4.5 c.m. by 1.9 c.m. The outer covering is a waterproof cloth, stitched up. It has a label with the direction "break the thread" on it. Inside the cover is a linen bandage, 4 c.m. long by 7 c.m. wide. At

25 c.m. distance from one end of the bandage three linen compresses, impregnated with sublimate and coloured red, are stitched, so that they can be applied to a wound without touching them with the fingers. Instructions are printed on the inner side of the cover to the effect that "neither the red dressings nor the wound must be touched with the fingers; the bandage is to be held at the places marked 'here,' the hands kept raised, and the bandage drawn open; the red dressing is then to be placed over the wound, and the bandage fixed over it and tied." The whole packet is sterilised in a steam steriliser.

These first field dressings are distributed to each officer and man, and when any is used it must be replaced. In addition they are distributed in various haversacks, panniers, &c., as follows:—

Pouch	..	..	..	..	..	3
Surgical knapsack	..	..	..	..	..	15
Surgical saddle-bags	..	..	..	..	..	70
Medical panniers	..	..	..	..	..	25
Stretcher-bearers' haversack	..	..	..	..	..	6
Bearer company	..	..	..	..	..	330
Field hospital	..	..	..	..	..	20
Infantry medical cart	..	..	..	..	..	50
Cavalry medical cart	..	..	..	..	..	50
Medical and surgical equipment waggon	..	..	..	..	..	350
Dépôt of medical stores on lines of communication	..	..	..	..	..	4,920

W. G. M.

French Army Instruction of September 23rd, 1907, relative to the Prevention of Venereal Diseases.—This important instruction (*Le Caducée* of October 26th, 1907) is based on recent researches in France, by Metschnikoff and Roux, regarding syphilis, and in Germany, by Neisser, regarding gonorrhœa, who show that both diseases can be prevented if certain steps are taken during the first few hours after exposure to infection.

Annually, as soon after the incorporation of recruits as possible, the medical officers of units will give lectures to the non-commissioned officers and men on venereal diseases, the manner in which they develop, their danger to the individual and to the race, their treatment, and especially their prevention.

They will take every opportunity, by friendly conversation, &c., to explain the meaning of the lectures, and will not hesitate to enter into details regarding the measures, indicated by modern researches, to avoid the results of exposure to infection; as, for example, the prevention of gonorrhœa by cleansing the urethra with solution of permanganate of potash, or avoiding the development of chancres by the use of calomel ointment.

In order to enable soldiers to apply these measures of prevention, the instruction requires that in each regimental *infirmérie* a special place shall be set apart for keeping ready the necessary antiseptics and utensils, so that men returning to barracks may go there and use them under the supervision of the medical orderly on duty (*infirmier de garde*).

The material kept for this purpose will be: (1) An ointment of 10 parts calomel and 20 parts lanolin. (2) A 1 in 5,000 solution of permanganate of potash, which should be used warm.

The method of using the permanganate solution is as follows: A bottle of several litres' capacity is filled with the solution and placed on a bracket about four feet from the floor. Glass syphon tubes are inserted into the cork, and a rubber tube attached to the end of the curved glass tube, with pinchers to stop the flow of the solution at will. A glass urethral nozzle is attached to the end of the rubber tube. It will be the duty of the orderly on duty to sterilise this nozzle in boiling water, and to keep it in a solution of 1 in 1,000 mercuric chloride after each time of use.

The calomel ointment will be given to each soldier requiring it in small wooden boxes of 5 grammes each. The solution is to be used first, then the ointment.

A report is to be submitted annually on the manner in which the instruction has been carried out, on the number of men making use of these preventive measures, and on the incidence of venereal disease for each unit.

W. G. M.

Correspondence.

WANTED, AN EXPLANATION.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—If the above subject is worthy of further discussion, a somewhat doubtful point, may I be allowed a few final remarks on Colonel Forman's letter in the November number of the Journal.

I discussed two points which appeared to me to be the cause of considerable difficulty to Colonel Forman. I need not go over the whole ground again, but will briefly state that though in many cases insects are not found in likely places "for no apparent cause," yet I gave reasons for my belief that the absence, or paucity, of mosquitoes at Sarant Wadi was due to the presence of fish. This is a definite statement, and no "begging the question." Colonel Forman suggests, with more humour than courtesy, that this offered explanation is "fishy"—with a comic allusion to the arboreal habits of the minnow tribe. I further compared Sarant Wadi with Colombo, where, in the neighbourhood of the lake, mosquitoes are extremely few, their numbers undoubtedly being kept down by the fish. It would not have occurred to me to have suggested the known propensities of fish to destroy mosquito larvæ if his statement that "fish never eliminated mosquitoes anywhere and never will," had not lead me to believe that he was unaware of it. The above with its attendant paragraphs is now labelled "Ambiguous!" I may be pardoned for my error, which under the circumstances was natural.

Colonel Forman does not admit even a paucity of mosquitoes, and affirms "that there are no mosquitoes at Sarant Wadi anywhere, or at any time, and no larvæ to be found in lake, pond, pool, puddle, rice-field, water-*chatty*, or any permanent or casual collection of water whatsoever." There can be no ambiguity about this; it is a dogmatic assertion with a vengeance, and one only to be held after a thorough investigation by an expert with a competent staff. But the next paragraph, and a reference to his first communication, shows that it is chiefly founded on the evidence of a Parsi doctor and his own investigations, which comprised a "rooting about in the vague hope of being on the threshold of some epoch-making discovery," during the scanty leisure afforded by the festivities of Christmas week. It is advisable when dealing with scientific questions to sacrifice hyperbole to exactness.

London,
November 11th, 1907.

I am, &c.,
N. MANDERS,
Lieutenant-Colonel, R.A.M.C.

THE TERMINOLOGY OF FIELD MEDICAL UNITS.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—After reading Lieutenant-Colonel W. G. Macpherson's article in the October number of the Journal, on "Notes on Staff Work as Applied to the Medical Services," the criticism that suggested itself to me was, that the terminology of Field Medical Units might with advantage be re-cast, as it is cumbrous and often misleading to the uninitiated.

It was not surprising, I think, that confusion arose, and the examples given by Lieutenant-Colonel Macpherson proved that this was the case, even amongst the Staff Officers of the Army.

<i>Present Terms.</i>	<i>Suggested Terms.</i>
Cavalry Field Ambulance.	Cavalry Ambulance.
Field Ambulance.	Infantry Ambulance.
Bearer Division.	Bearer Party.
Tent Division.	Tent Party.
Bearer Sub-Division.	Bearer Group.
Tent Sub-Division.	Tent Group.
Sections	} are good terms.
Stretcher Squads	

There seems to me no reason why the term "Ambulance" should have "Field" prefixed, nor do I understand why there is so much hesitation

in using the term "Ambulance" in a comprehensive sense. At one time any form of ambulance waggon was loosely styled "Ambulance," but this limitation of the term should not be allowed for many reasons.

From the Army Orders of March 1st, 1906, I take the following extract: *X. Field Training. Part I. Organisation of Field Ambulance.* "The complete ambulance will accommodate 150 sick in tents," &c., &c. This is a comprehensive use of the term, and, I think, a right one.

The term "Division" in Army parlance suggests 9,503 cavalry or 19,630 infantry, yet we make use of the term to distinguish parties of 42, 34, 129 or 63 R.A.M.C.

I am, &c.,

R. KIRKPATRICK,

Lieutenant-Colonel, R.A.M.C.

November 14th, 1907.

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Distribution List of Officers
OF THE
ARMY MEDICAL STAFF
AND
ROYAL ARMY MEDICAL CORPS.

JULY, 1907.

[This List is prepared according to the latest information received. Officers are invited to communicate any particulars regarding alterations, errors, or omissions, to THE MANAGER, Journal R.A.M.C., War Office, London, S.W.]

SPECIALIST CERTIFICATES IN :

- a = State Medicine (R.A.M. College qualification).**
- b = Diploma in Public Health.**
- c = Bacteriology.**
- d = Dental Surgery.**
- e = Dermatology and Venereal Diseases.**
- f = Specific Fevers.**
- g = Laryngology.**
- h = Midwifery and Gynæcology.**
- j = Operative Surgery.**
- k = Ophthalmology.**
- l = Otology.**
- m = Pædiatrics.**
- n = Psychological Medicine.**
- o = Skiagraphy.**
- p = Diploma in Tropical Medicine.**

ARMY MEDICAL SERVICE.

HEADQUARTER STAFF.

Rank.	Name.	Appointment.
Surgeon-General ..	Keogh, Sir A., M.D., K.C.B. ..	Director-General of Army Med. Services.
" " ..	Fawcett, W. J., M.B., C.B. ..	Deputy Director-General.
Lieutenant-Colonel .	Irwin, J. M., M.B. ..	Assistant Director-General.
" " ..	Russell, M. W. ..	Deputy Assistant Director-General.
Major ..	Thurston, H. C., C.M.G. ..	" " " "
" " ..	Buist, H. J. M., D.S.O., M.B. ..	" " " "
Lieutenant-Colonel .	Macpherson, W. G., M.B., C.M.G. ..	" " " " (at- tached to the Department of the Director of Military Operations).

ARMY MEDICAL SERVICE ADVISORY BOARD.

Rank.	Name.	Appointment.
Brevet-Colonel ..	Bruce, D., F.R.S., M.B., C.B. ..	Expert in Tropical Diseases.
Lieutenant-Colonel .	Melville, C. H., M.B. ..	Expert in Sanitation and Secretary.

ROYAL ARMY MEDICAL COLLEGE.

Rank.	Name.	Appointment.
Colonel (<i>temporary</i>) .	James, H. E. R. ..	Commandant and Director of Studies.
Major ..	Spencer, C. G., M.B., F.R.C.S. Eng.	Professor of Military Surgery.
Lieutenant-Colonel .	Simpson, R. J. S., M.B., C.M.G. ..	" Tropical Medicine.
" " ..	Davies, A. M. ..	" Hygiene.
Major (Brevet-Lieu- tenant-Colonel)	Leishman, W. B., M.B. ..	" Pathology.
Major ..	Fowler, C. E. P., F.R.C.S.Eng.	Assistant Professor of Hygiene.
" " ..	Harrison, W. S., M.B. ..	" Pathology.
Lieutenant-Colonel . (Brevet-Colonel)	Lambkin, F. J. ..	Lecturer in Syphilology.

SURGEON GENERALS.

Name.	Station.	Appointment.
Charlton, W. J. ..	London ..	Principal Med. Officer, Eastern Command, England.
Donovan, W., C.B. ..	Pretoria ..	" " " South Africa.
Edge, J. D., M.D., C.B. ..	Dublin ..	" " " Irish Command.
Fawcett, W. J., M.B., C.B. ..	War Office, London ..	Headquarter Staff.
Gallwey, Sir T. J., M.D., K.C.M.G., C.B. ..	Aldershot ..	Principal Med. Officer, Aldershot Command.
Gubbins, W. L., M.B., C.B., M.V.O. ..	Simla, India ..	" " " His Majesty's Forces in India.
Pratt, W. S., M.B., C.B. ..	Salisbury ..	" " " Southern Command.
Quill, R. H., M.B. ..	Netley ..	" " " Netley.
Slaughter, W. B. ..	Naini Tal, India ..	" " " Eastern Command, India.
Trevor, F. W., M.B. ..	Poona, India ..	" " " Western Command, India.

COLONELS.

Name.	Station.	Appointment.	Specialist Certifi- cates in
Barrow, H. J. W.	Dalhousie, India	Prin. Med. Officer, 3rd Lahore Div.	—
Bourke, G. D.	Devonport	Admin. Med. Officer, Devonport	—
Babtie, W., M.B., V.C., C.M.G.	London	Inspector of Medical Services . .	—
Chester, W. L., M.B. . . .	Peshawar, India	Principal Med. Officer, 1st Peshawar Division	—
Corker, T. M., M.D. . . .	Edinburgh	Prin. Med. Officer, Scottish Com.	—
Croly, A. E. J., F.R.C.S.I.	Dover	Admin. Med. Officer, Dover . .	—
Dorman, J. C., M.B., C.M.G.	Cape Town, S. Africa . .	„ „ „ Cape Colony	—
Ellis, P. M.	Quetta, India	Principal Medical Officer, 4th Quetta Division	—
Forman, R. H., M.B. . . .	Bombay, India	Principal Medical Officer, Bombay Brigade	—
Inman, A. W. P., M.B. . .	„ „ „	Sick leave	—
Harwood, J. G.	Darjeeling, India. . . .	Principal Medical Officer, Presidency and Assam Brigades	—
Kenny, W. W., M.B. . . .	Pretoria	Administrative Medical Officer, Transvaal District	—
Leake, G. D. N.	Naini Tal, India	Prin. Med. Officer, Lucknow Div.	—
Lloyd, O. F. P., V.C. . .	Jubbulpore, India . . .	„ „ „ Jubbulpore and Jhansi Brigades	—
McNamara, J., M.D. . . .	Gibraltar	Principal Med. Officer, Gibraltar	—
May, W. A., C.B.	Salisbury	Admin. Med. Offi., Tidworth Dist.	—
Morris, J. J., M.D. . . .	Portsmouth	„ „ „ Portsmouth . .	—
Magill, J., M.D., C.B. . .	Cairo	Principal Medical Officer, H.M. British Troops, and Officer Commanding R.A.M.C. in Egypt	—
MacNeece, J. G.	Malta	Principal Med. Offi., Malta Com.	—
Martin, H., M.B.	Chester	„ „ „ Western „	—
MacNeece, T. F.	Chatham	Admin. Med. Offi., Thames and Medway	—
North, E.	Dublin	Admin. Med. Officer, Dublin Dist.	—
O'Connor, A. P., C.B. . .	York	Prin. Med. Officer, Northern Com.	—
Rainsford, W. J. R., C.I.E.	Bermuda	„ „ „	—
Robinson, G. W.	Colchester	Admin. Medical Officer, Colchester	—
Sloggett, A. T., C.M.G. . .	London	Prin. Med. Officer, London Dist.	—
Seymour, C., M.B.	Royal Hospital, Chelsea. .	Physician and Surgeon	—
Todd, O., M.B.	Bangalore, India	Principal Med. Officer, Bangalore and Southern Brigades	—
Williamson, J. F., M.B., C.B., C.M.G.	Mhow, India	Principal Medical Officer, 5th Div.	—
Whitehead, H. R., F.R.C.S. Eng.	Rawalpindi, India . . .	Principal Med. Officer, 2nd Rawalpindi Division	b.
Webb, C. A.	Cork	Administrative Med. Officer, Cork	b.

LIEUTENANT-COLONELS.

(Under Article 365 of the Royal Warrant.)

Name.	Station.	Appointment.	Specialist Certifi- cates in
Anderson, L. E.	Aldershot	Offi. in charge Cambridge Hosp.	—
Allport, H. K., M.D. . . .	Cairo, Egypt	Leave	—
Bruce, D., F.R.S., M.B., C.B. (Brevet-Colonel)	London	Expert in Tropical Diseases, Army Medical Service Advisory Board	—
Bedford, W. G. A., M.B., C.M.G.	Portsmouth	Officer in charge Mil. Hosp. and Command. 6th Coy. R.A.M.C.	—
Baker, W. J.	Dublin	Officer in charge Military Hospital, Arbour Hill	—
Butt, E.	Dublin	Medical Inspector of Recruits, Irish Command	—

Name.	Station.	Appointment.	Specialist Certificates in
Battersby, J., M.B.	Secunderabad, India	Officer in charge Military Hospital	—
Coutts, G., M.B.	Colchester	" " Mil. Hosp. and Command. 9th Coy. R.A.M.C.	—
Coates, G. J., M.D.	Cork	Officer in charge Military Hospital	—
Dodd, J. R., M.B., F.R.C.S. Eng.	Agra, India	Leave	b.
Daly, F. A. B., C.B., M.B.	Curragh	Officer in charge Mil. Hosp., and Command. 17th Coy. R.A.M.C.	—
Davies, A. M.	R.A.M. College, London	Professor of Hygiene	b.
Emerson, I. B.	York	Officer in charge Mil. Hosp., and Command. 8th Coy. R.A.M.C.	—
Ford, R. W., D.S.O.	Gibraltar	Officer in charge Military Hospital	—
Goggin, G. T.	Belfast	Administrative Med. Offi., Belfast	—
Hodson, R. D.	Chatham	Officer in charge Mil. Hosp., and Command. 10th Coy. R.A.M.C.	—
Heffernan, W.	Wynberg, S. Africa	Officer in charge Military Hospital	—
Hathaway, H. G.	Poona, India	Leave	—
Jones, J. M.	Devonport	Officer in charge Mil. Hosp., and Command. 7th Coy. R.A.M.C.	—
Jennings, R., M.D.	Valetta, Malta	Officer in charge Military Hospital	—
Kerin, M. W.	Peshawar, India	" " " " " "	—
Kay, A. G., M.B.	Netley	" " " " D Block, Royal Victoria Hospital	—
Love, R. L., M.D.	Fermoy	Officer in charge Military Hospital	—
Lucas, T. J. R., M.B.	Bangalore, India	" " " " " "	—
Maclean, F. B.	Potchefstroom, S. Africa	" " " " " "	—
Milward, E. O.	Southampton	Embarkation Medical Officer	—
Murray, H. W., M.B.	Shorncliffe	Officer in charge Military Hospital	—
Maunsell, E. L.	Bloemfontein	Administrative Medical Officer	—
Mosse, C. G. D., F.R.C.S.I.	Jamaica	Senior Medical Officer and Com- manding R.A.M.C., Jamaica	—
Moberley, H. J. R.	Aldershot	Officer in charge Connaught Hosp.	—
Macpherson, W. G., C.M.G., M.B.	War Office, London	Headquarter Staff	b.
Noding, T. E.	Cape Town, South Africa	In charge Women and Children, Staff and Departments	—
O'Sullivan, D.	Rawalpindi, India	Officer in charge Military Hospital	—
O'Keefe, M. O.	Karachi, India	" " " " " "	—
O'Donnell, T. J., D.S.O.	Quetta, India	" " " " " "	—
Peterkin, A., M.B. (Colonel Mauritius)	Mauritius	Senior Medical Officer	—
Porter, R., M.B.	Belfast	Officer in charge Mil. Hosp. and Command. 15th Coy. R.A.M.C.	—
Robinson, S. C. B.	Ahmednagar, India	Officer in charge Military Hospital	—
Rhodes, J. H. A.	Cottonera, Malta	Leave	—
Rowney, W., M.D.	Lucknow, India	Officer in charge Military Hospital	—
Rose, A. S., M.D.	Meerut, India	Leave	—
Sylvester, G. H., F.R.C.S. Eng.	Ceylon	Senior Medical Officer and Officer Command. 26th Coy. R.A.M.C.	—
Townsend, S., M.D.	Dover	Officer in charge Mil. Hosp., and Command. 11th Coy. R.A.M.C.	—
Wardrop, D., M.B.	Woolwich	Officer in charge Royal Herbert Hospital	—
Woods, C. R., M.D.	Dublin	Officer in charge Roy. Infirm. and Command. 14th Coy. R.A.M.C.	b.
Woodhouse, T. P.	Kasauli, India	Officer in charge Military Hospital	—

LIEUTENANT-COLONELS.

Name.	Station.	Appointment.	Specialist Certificates in
Adams, G. G.	Salisbury	Medical Inspector of Recruits, Southern Command	—
Allen, S. G.	Ambala, India	Leave	b.
Adamson, H. M., M.B.	Ranikhet, India	Officer in charge Military and Cantonment Hospital	—
Aldridge, A. R., M.B.	Simla, India	Sanitary Officer, Army Headqtrs.	—
Austin, H. W.	Londonberry	Officer in charge Military Hospital	—
Battersby, H. L.	Hounslow	and Recruiting	—
Birrell, W. G., M.B.	Edinburgh	Medical Inspector of Recruits, Scottish Command	—
Brazier-Creagh, G. W., C.M.G.	Lichfield	Officer in charge Military Hospital	—
Barratt, H. J.	Agra, India	" " " "	b.
Burton, F. H. M., M.D.	Standerton, S. Africa	" " " "	—
Brooke-Pechell, Sir A. A., Bt., M.B.	London	Recruiting, "London District"	—
Bond, R. P.	Aldershot	Officer in charge Isolation Hospital	—
Braddell, M. O'D., M.B.	Golden Hill	" " Military Hospital	—
Beevor, W. C., M.B., C.M.G.	Quetta, India	" " " "	—
Birt, C.	Millbank, London	Clinical Pathologist	—
Berryman, W. E.	Muttra, India	Officer in charge Military Hospital	—
Blackwell, C. T., M.D.	Belgaum, India	" " " "	b.
Buchanan, J. B. W., M.B.	Maryhill	" " " "	—
Frown, H. H., M.B.	Preston	" " " "	—
Burtchaell, C. H., M.B.	Dublin	Staff Officer to Principal Medical Officer, Irish Command	—
Barefoot, G. H.	Winchester	Officer in charge Military Hospital	—
Bate, A. L. F.	Neemuch, India	Leave	—
Culling, J. C.	Pembroke Dock	Officer in charge Military Hospital	—
Carmichael, J.	Jullundur, India	" " " "	—
Caldwell, R.	Devonport	Sanitary Officer, Western Area, Southern Command	b.
Cree, G.	Wellington, India	Officer in charge Military Hospital and Plague Medical Officer	—
Curtis, J. H.	Ballincollig	Officer in charge Military Hospital	—
Carr, H., M.D.	Nasirabad, India	" " " "	—
Cree, H. E.	Guildford	Officer in charge Military Hospital	—
Cocks, H., M.B.	India	" " " "	—
Clarkson, T. H. F.	Tower of London	Officer in charge Military Hospital	—
Cottell, R. J. C.	Royal Hospital, Chelsea	Deputy Surgeon	h.
Dundon, M.	Plymouth	In charge Women and Children	—
Dick, W.	Edinburgh	Officer in charge Military Hospital and Com. 13th Coy. R.A.M.C.	b.
Dodd, A.	Chester	Officer in charge Military Hospital	—
Donnet, J. J. C.	Saugor, India	" " " "	—
Duncan, S. E.	Birmingham	Officer in charge Troops	—
Day, W. B., M.B.	Crownhill, Devonport	" " " "	—
Daly, J. H.	Queenstown	Officer in charge Military Hospital and Anæsthetist	—
Daly, T.	Warley	Officer in charge Military Hospital and Recruiting	—
Davidson, J. S., M.B.	Royal Herbert Hospital, Woolwich	Registrar and Secretary and O.C. 12th and 34th Coys. R.A.M.C.	—
Donegan, J. F.	Cairo, Egypt	Officer in charge Military Hospital and O.C. 33rd Coy., R.A.M.C.	—
Donaldson, J.	Naini Tal, India	Officer in charge Military Hospital, Headquarters Staff and Establishments, also medical charge 19th Gurkhas	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Elkington, H. P. G. ..	Jubbulpore, India ..	Offi. in charge Brigade Laboratory	b.
Eckersley, E., M.B. ..	London	Recruiting, London District ..	—
Franklin, D. F.	Calcutta, India	Officer in charge Military Hospital	b.
Firth, R. H., F.R.C.S.	Aldershot	In charge School of Army Sanita- tion and Instructor R.A.M.C.	b.
Eug.		School of Instruction	
Faunce, C. E.	Tidworth	Officer in charge Military Hospital	—
Freyer, S. F., M.B., C.M.G.	Secunderabad, India ..	Leave	—
Forrest, J. R.	Delhi, India	Officer in charge Military Hospital	b.
Fletcher, H. J., M.B. ..	Shoeburyness	" " " Families'	—
		Hospital and Recruiting	
Ferguson, N. C., M.B.,	Middelburg, Cape Colony	Officer in charge Military Hospital	b.
C.M.G.			
Fallon, J.	Multan, India	Temp. Officer in charge Military Hospital	—
Fayrer, Sir J., Bt., M.D.,	Duke of York's School ..	Officer in Medical Charge..	—
F.R.C.S.E.			
Geoghegan, A. O., M.D. ..	Bury	Officer in charge Military Hospital	—
Gibson, J., M.B.	Limerick	" " " "	—
Geddes, R. J., M.B., D.S.O.	Longmoor	" " " "	b.
Gubbin, G. F.	Colaba, India	" " " "	b.
Gordon, P. C. H.	Rangoon, India	" " " "	—
Gerrard, J. J., M.B. ..	Forrest, Malta	" " " "	—
Hackett, R. I. D.	Bulford	" " " "	—
		and Com. 20th Coy., R.A.M.C.	
Haslett, J. C., M.D. ..	Allahabad, India	Officer in charge Military Hospital	—
Hamilton, T. W. O. H.,	Aldershot	Staff Officer to P.M.O., A. C. ..	—
M.B., C.M.G.			
Heuston, F. S., C.M.G. ..	Royal Hosp., Kilmainham	Physician and Surgeon	—
Hunter, G. D., D.S.O. ..	Egypt	Principal Medical Officer Egyptian Army	—
(Colonel Egypt)			
Henderson, R. S. F., M.B.	Netley	Registrar and Secretary, and Com. 4th, 5th & 21st Coys. R.A.M.C.	—
Haines, H. A., M.D. ..	Ambala, India	Officiating Officer in charge mili- tary Hospital & Special Plague Health Officer	—
Hale, G. E., D.S.O. ..	Hyderabad, India	Officer in charge Military Hospital	—
Hickson, S., M.B. ..	Harrismith, S. Africa ..	" " " "	—
Hearn, M. L.	North China	Senior Medical Officer	—
Hall, R. H., M.D. ..	London	Recruiting, London District ..	—
Hanley, R. G., M.B. ..	Dublin	Officer in charge Military Hospital, Portobello	—
Hall, F. W. G., M.B. ..	Landour, India	Officer in charge Military Hospital	—
Hennessey, D., M.D. ..	Deolali, India	" " " "	—
Holyoake, R.	Dagshai, India	" " " Military and Can- tonment Hospital	—
Irvine, D. L.	Aldershot	In charge Cavalry Brigade	—
Irwin, J. M., M.B. ..	War Office, London ..	Headquarters Staff	—
Johnston, H. H., M.D.,	Fort Canning, St. Setts. ..	Senior Medical Officer, Straits Settlements	b.
C.B.			
Jencken, F. J., M.B. ..	Meerut, India	Officer in charge Military Hospital	b.
James, H. E. R., F.R.C.S.	R.A.M. College, London ..	Commandant and Director of Studies	b.
Eng. (temp. Colonel)			
Johnson, C. W., M.B. ..	Sheerness	Officer in charge Military Hospital	—
Jones, F. W. C., M.B. ..	Kamptee, India	" " " "	—
Josling, C. L.	London	Recruiting, London District ..	—
Kirkpatrick, R., M.D.,	Chester	Medical Inspector of Recruits ..	—
C.M.G.			
Kennedy, A.	Pachmari, India	Officer in charge Military and Cantonment Hospital	—
Knaggs, H. T., M.D. ..	Dublin	" " " "	b.
Lambkin, F. J. (Bt.-Col.)	Rochester Row, London ..	Officer in charge Military Hospital	—
Loughheed, S. F., M.D.,	Royal Arsenal, Woolwich	Senior Medical Officer	—
C.M.G.			

Name.	Station.	Appointment.	Specialist Certi- ficates in
Lynden-Bell, E. H. L., M.B.	Fyzabad, India ..	Officer in charge Military Hospital	—
Lilly, A. T. I. ..	Canterbury ..	" " " "	—
Lane, C. A., M.B. ..	Colombo, Ceylon ..	" " " "	—
Lavie, T. G. ..	Thayetmyo, India ..	Officer in charge Military Hospital	—
Le Quesne, F. S., V.C. ..	Lucknow, India ..	" " Section Hospital	—
McCreery, B. T., M.B. ..	Shabhajapur, India ..	" " Military and Cantonment Hospital	b.
Morse, R. E. R. ..	Cawnpore, India ..	Officer in charge Military Hospital	—
Magrath, C. W. S., M.D.	Hilsea ..	" " " "	—
Morris, W. A. ..	Murree, India ..	" " " "	—
McGill, H. S. ..	Poona, India ..	" " " "	b.
Moore, R. R. H., M.D. ..	Netley ..	In charge Medical Division	—
Maher, J. ..	Sandhurst ..	Surgeon R.M.C.	—
Manders, N. ..	Curepipe, Mauritius	Officer in charge Military Hospital	—
Meek, J., M.D. ..	Poona, India ..	Sanitary Officer, Western Command	b.
Morris, A. E., M.D. ..	Jubbulpore, India ..	Officer in charge Military Hospital	—
Macleod, R. L. R., M.B.	Quetta, India ..	" " Divisional Lab.	b.
Melville, C. H., M.B. ..	London ..	Expert in Sanitation, Army Medical Service Advisory Board	b.
Mills, B. L., M.D., F.R.C.S. Edin.	Poona, India ..	Leave ..	b.
MacDonald, C. J., M.D. ..	Cork ..	Officer in charge Mil. Hos., and Com. 16th Coy. R.A.M.C.	—
Mathias, H. B., D.S.O. ..	Simla, India ..	" " " "	—
Marks, G. F. H., M.D. ..	Darjeeling, India ..	Officer in charge Military Hospital	—
Nichols, F. P., M.B. ..	Norwich ..	" " " "	—
Nichol, C. E., M.B., D.S.O.	Aldershot ..	Commandant R.A.M.C. School of Instruction, Officer Commdg. Depôt R.A.M.C., and Officer in charge Records	—
Nash, L. T. M. ..	Barrackpore, India ..	Officer in charge Military Hospital	—
Newland, F. R., M.B. ..	Ahmednagar, India ..	Leave ..	—
O'Connell, D. V., M.D. ..	Gibraltar ..	In charge Staff and Departments and Garrison Dispensary	b.
O'Halloran, M., M.D. ..	Middelburg, Transvaal ..	" " " "	—
O'Donnell, J. J., M.B. ..	Kirkee, India ..	Officer in charge Military Hospital	—
O'Callaghan, D. M. ..	Rawalpindi, India ..	" " " "	—
Pike, W. W., D.S.O. ..	Maymyo, India ..	Officer in charge Military Hospital	—
Powell, S., M.D. ..	Aldershot ..	" " Louise Margaret Hospital	—
Philson, S. C. ..	Roorkee, India ..	Officer in charge Military Hospital	—
Penton, R. H., D.S.O. ..	York ..	Medical Inspector of Recruits, Northern Command	—
Risk, E. J. E. ..	Bloemfontein, S. Africa ..	Offi. in charge Mil. Hosp., and Offi. Commdg. 24th Coy. R.A.M.C.	—
Reade, W. L. ..	Madras, India ..	Officer in charge Military Hospital and H.E. the Governor's Body Guard	—
Russell, A. F., M.B., C.M.G.	London ..	Medical Inspector of Recruits, Eastern Command	—
Reckitt, J. D. T. ..	Multan, India ..	Leave ..	—
Reid, J. M., M.D. ..	Victoria, S. China ..	Offi. in charge Mil. Hosp., and Offi. Commdg. 27th Coy. R.A.M.C.	—
Russell, M. W. ..	War Office, London ..	Headquarter Staffs ..	—
Reilly, C. C. ..	Ambala, India ..	" " " "	—
Rowan, H. D., M.B. ..	Lahore Cantmnt., India ..	Officer in charge Military Hospital	—
Russell, J. J., M.B. ..	Sialkot, India ..	Temp. Offi. in charge Mil. Hosp.	—
Swabey, L. W. ..	Sitapur, India ..	Leave ..	—
Sawyer, R. H. S., M.B. ..	Pretoria, S. Africa ..	Offi. in charge Mil. Hosp., and Offi. Commdg. 23rd Coy. R.A.M.C.	—
Skinner, B. M., M.V.O. ..	Nowshera, India ..	Officer in charge Military Hospital	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Simpson, R. J. S., M.B., C.M.G.	R.A.M. College, London..	Professor of Tropical Medicine ..	—
Stuart, J. R., M.B.	Neemuch, India ..	Officer in charge Military Hospital	—
Sloggett, H. M. ..	Cottonera, Malta ..	" " " "	—
Swan, W. T., M.B.	Ambala, India ..	" " " "	—
Shine, J. M. F., M.D.	Jhansi, India ..	Officer in charge Military Hospital	—
Sparkes, C. S. ..	Deeput and Blackdown..	" " Detention Hosp.	—
Sexton, M. J., M.D.	Chakrata, India ..	" " Military Hospital	—
Starr, W. H. ..	Bangalore, India ..	" " " "	—
Sutton, A. A., D.S.O.	Woolwich ..	Officer in charge Medical Division	—
Salvage, J. V., M.D.	London ..	Sanitary Officer, Area South of Thames	b.
Saunders, D. M., M.D.	Dublin ..	Sanitary Officer, Dublin and Belfast Districts	b.
Thiele, C. W., M.B.	Bellary, India ..	" " " "	—
Treherne, F. H. ..	Sialkot, India ..	Leave	b.
Trevor, H. O. ..	Aldershot ..	Medical Inspector of Recruits for Aldershot Command	—
Tyrrell, C. R. ..	London ..	Staff Officer to Principal Medical Officer, Eastern Command	—
Thomson, W. B. ..	Portsmouth ..	In charge Military Families' Hosp.	—
Tate, A. E. ..	Simla, India ..	Staff Surgeon Army Headqtrs.	—
Thompson, H. N., M.B., D.S.O.	Woking ..	Officer in charge Military Hospital	—
Turner, W. ..	Ferozepore India ..	" " " "	—
White, H. L. E. ..	Woolwich ..	Recruiting Medical Officer ..	—
Weston, G. E. ..	Prospect, Bermuda	Officer in charge Military Hospital	—
Westcott, S., C.M.G.	Mhow, India ..	" " " "	b.
Wyatt, H. J. ..	Dublin ..	" " " "	—
Wilson, G., M.B. ..	Ferozepore, India ..	Officer in charge Military Hospital	—
Winter, T. B. ..	Bareilly, India ..	" " " "	b.
Wills, S. R. ..	Holywood ..	" " " "	—
Wilson, J. B., M.D.	Alexandria, Egypt	" " " "	—
Will, J., M.B. ..	Uganda ..	" " " "	—
Wright, R. W. ..	Woolwich ..	" " " "	—
Windle, R. J., M.B.	Dublin ..	" " " "	—
Whaite, T. Du B., M.B.	Gibraltar ..	" " " "	—
Yourdi, J. R., M.B.	Fort Regent, Jersey	Offi. in charge Mil. Hosp. & S.M.O.	—
Yarr, M. T., F.R.C.S.I.	Colaba, India ..	" " " "	—

MAJORS.

Alexander, G. F., M.B. ..	Aldershot ..	" " " "	—
Austin, J. H. E. ..	Hounslow ..	" " " "	—
Anderson, E. C., D.S.O.	Shorncliffe ..	" " " "	—
Alexander, J. D., M.B. ..	Cahir ..	Officer in charge Military Hospital	—
Austin, R. F. E. ..	Chatham ..	" " " "	—
Anderson, J. B. ..	Meerut, India ..	Officer in charge Divisional Lab.	c.
Burnside, E. A. ..	Jullundur, India ..	Special Plague Health Officer ..	—
Browne, E. G. ..	Dublin ..	" " " "	b.
Bullen, J. W., M.D.	Mullingar ..	Officer in charge Military Hospital	—
Blenkinsop, A. P. ..	Agra, India ..	" " " "	—
Borradaile, A. L., M.B.	Ashton ..	Officer in charge Military Hospital	—
Beach, T. B. ..	Chatham ..	Company Officer ..	—
Bewley, A. W. ..	Newbridge ..	Officer in charge Military Hospital	—
Beveridge, W. W. O., M.B., D.S.O.	London ..	Medical Officer, Royal Army Clothing Department	b.
Bray, G. A. T. ..	Chatham ..	Company Officer ..	—
Buist, H. J. M., M.B., D.S.O.	War Office, London	Headquarters Staff ..	—
Brogden, J. E. ..	Tientsin, N. China	Officer in charge Military Hospital	—
Begbie, F. W. ..	Mhow, India ..	Consulting Surgeon, R.M. Railway	—

Name.	Station.	Appointment.	Specialist Certin- cates in
Beyts, W. G.	Subathu, India	Officer in charge Mil. & Can. Hosp.	—
Buchanan, G. J., M.B.	Glasgow	Recruiting	—
Bray, H. A.	Bulford	Company Officer	—
Buswell, F. R.	Ahmednagar, India .. ..	.. ..	—
Berryman, H. A.	Gibraltar	Company Officer	o.
Barnett, K. B., M.B., F.R.C.S.I.	Peking, N. China.. ..	Officer in charge Military Hospital British Legation Guard	m.
Boyle, M., M.B.	Ranikhet, India .. ..	.. ..	o.
Buist, John M., M.B.	Pretoria, S. Africa	Leave	b.c.p.
Blackham, R. J.	Devonport	Officer in charge Military Families' Hospital	b. h.
Clark, S. F., M.B.	Bloemfontein, S. Africa.. ..	Sanitary Officer, O.R.C. District..	b.
Copeland, R. J., M.B.	Portsmouth	Company Officer	—
Connor, J. C., M.B.	Parkhurst	Officer in charge Military Hospital	—
Crawford, G. S.	Imtarfa, Malta	" " " "	b.
Condon, E. H., M.B.	Jullundur, India	" " " "	—
Chambers, A. J.	Netley	" " Staff and Families	—
Collins, D. J., M.B.	Pretoria, S. Africa	" " Military Families' Hospital	k. b.
Clark, E. S., M.B.	Peshawar, India .. ..	.. ..	f.
Cameron, K. M., M.B.	Kasauli, India .. ..	.. ..	j.
Carter, J. E., M.B.	Middleburg, Cape Colony	Anæsthetist	f.
Campbell, J. H., D.S.O.	Colchester	Officer in charge Military Families' Hospital	h.
Durant, R. J. A.	Dum Dum, India.. ..	Officer in charge Military Hospital, Ammunition Factory, Cossipore and Dukinsore Factories, and Cantonment Outdoor Dispen- sary, and Civil Surgeon	—
Davoren, V. H. W.	Devonport	Company Officer	—
Dalton, C.	Rawalpindi, India .. ..	.. ..	—
Duggan, C. W., M.B.	Lebong, India	Officer in charge Military Hospital	—
Dunn, H. N., M.B.	Ambala, India .. ..	.. ..	—
Dansey-Browning, G.	Attached Egyptian Army	.. ..	b.
Edye, J. S.	Cawnpore, India	Leave	—
Elliott, C. R., M.D.	Dublin	Sanitary Officer, Cork District ..	b.
Erskine, W. D., M.B.	Cairo, Egypt	Officer in charge, Abbassia ..	—
Evans, P., M.B.	Cairo, Egypt	Specialist in Operative Surgery ..	b. f. j.
Freeman, E. C., M.D.	Up Park Camp, Jamaica..	San. Officer, and Officer in charge Mil. Hosp. and Officer Commdg. 29th Coy. R.A.M.C.	b.
Forde, B., M.B.	Middelburg, Transvaal .. ..	.. ..	—
Ferguson, J. D., D.S.O..	Aldershot	Instructor, R.A.M.C. School of Instruction	—
Faichnie, N., M.B.	York	Sanitary Offi., Northern Command	b. p.
Fleming, C. C., M.B., D.S.O.	Crete	Officer in charge Military Hospital	—
Faichnie, F. G.	Aden .. ..	.. ..	—
Fowler, C. E. P., F.R.C.S. Eng.	R.A.M. College, London..	Assistant "Professor" of Military Hygiene	k. b.
French, H. C.	Woolwich	Sick leave	e. b.
Fleury, C. M.	Tigne and Sliema, Malta	Officer in charge Troops, Women and Children	o.
Fox, A. C.	Alexandria, Egypt .. ..	.. ..	h.
Fairrie, S. H., M.B.	Shorncliffe.. ..	Officer in charge Military Families' Hospital	h.
Gray, W. L., M.B.	Valetta, Malta	Sanitary Officer	b.
Girvin, J.	Tower Hill, W. Africa	Senior Medical Officer and Officer in charge Military Hospital	—
Graham, W. A. S. J.	Chatham	Officer in charge Casualty Hospital	—
Gibbard, T. W., M.B.	Rawalpindi, India .. ..	.. ..	k.
Goodwin, T. H. J. C., D.S.O.	Quetta, India	Officer in charge Station Staff ..	j. o.

Name.	Station	Appointment.	Specialist Certifi- cates in
Green, S. F. St. D. ..	Prospect, Bermuda ..	In charge Women and Children	h.
Grattan, H. W. ..	R.A.M. College, London ..	Special duty	b. o.
Grech, J. ..	Meerut, India	Specialist in Dermatology ..	o.
Gunter, F. E., M.B. ..	Curragh	„ Operative Surgery ..	j.
Hall, R. J. D. ..	Belfast	Offi. in charge Women & Children	—
Horrocks, W. H., M.B. ..	Gibraltar	Sanitary Officer	b.
Hale, C. H., D.S.O. ..	Secunderabad, India ..	„	—
Hinde, A. B. ..	Bloemfontein, S. Africa ..	Officer in charge Military Families' Hospital	—
Holt, M. P. C., D.S.O. ..	Woolwich	In charge Surgical Division, Royal Herbert Hospital	j.
Hassard, E. M. ..	Shorncliffe	„	—
Hallaran, W., M.B. ..	Amritsar, India	Officer in charge Mil. & Can. Hos.	—
Healey, C. W. R. ..	Clonmel	„ Military Hospital	—
Hardy, F. W., M.B. ..	Cairo, Egypt	Sanitary Officer	b.
Healy, C. J., M.B. ..	Glen Imaal	„	—
Hardy, W. E. ..	Pretoria, S. Africa ..	„	—
Hennessy, J., M.B. ..	Poonamallee, India ..	Officer in charge Military Hospital	—
Hinge, H. A. ..	Poona, India	„	—
Harrison, W. S., M.B. ..	R.A.M. College	Assistant Professor of Pathology ..	c.
Howell, H. A. L. ..	Gibraltar	„	f.
Innis, B. J. ..	Fyzabad, India	Leave	—
Julian, O. R. A., C.M.G. ..	Peshawar, India	Staff Surgeon and in charge Divisional Laboratory	b.
Jackson, R. W. H., M.B. ..	Athlone	Officer in charge Military Hospital	b.
Jennings, J. W., D.S.O. ..	India	Leave	o.
Jameson, J. C., M.B. ..	Cairo, Egypt	„	b.
Johnson, H. P., M.R.C.P. ..	Okehampton	Officer in charge Military Hospital	—
	Lond.		
Jones, T. P., M.B. ..	Kowloon, S. China	„ „ Non-dieted „	—
Kelly, J. F. M., M.B. ..	Kilworth Camp	„ „ Military Families'	h. b.
Keble, A. E. C. ..	Chatham	Hospital	
Kiddle, F., M.B. ..	Mount Abu, India	Specialist in Ophthalmology, and Offi. in charge Military Hosp., Lawrence School and Residency Surgeon	k.
Killery, St. J. B. ..	India	„	—
Leishman, W. B., M.B. ..	R.A.M. College, London ..	Professor of Pathology	—
	(Brevet-Lieut.-Col.)		
Luther, A. J. ..	Bhamo, India	Officer in charge Military Hospital	—
Lenahan, T. J., M.B. ..	Potchefstroom, S. Africa ..	„	—
Lawson, C. B., M.B. ..	Valetta, Malta	Bacteriologist and Anæsthetist ..	o. j.
Lewis, R. C. ..	Chaubuttia, India	Officer in charge Military Hospital	—
Longhurst, B. W. ..	Gibraltar	„	d.
Lawson, D. ..	Netley	„	—
Morgan, F. J. ..	Netley	In charge Surgical Division ..	—
McCulloch, T., M.B. ..	Ambala, India	„	—
Macdonald, S., M.B. ..	Woolwich	„	—
Morgan, J. C. ..	Naini Tal, India	Sanitary Offi., Eastern Command	—
Mould, W. T. ..	Sitapur, India	Temp. Officer in charge Military Hospital	—
McLoughlin, G. S., M.B., D.S.O.	Colchester	„	—
Mawhinny, R. J. W. ..	Ireland	Leave	—
McDowell, F. ..	Nowshera, India	„	—
MacCarthy, I. A. O. ..	Curragh	„	—
Morphew, E. M. ..	Kailana, India	Officer in charge Section Hospital	—
Mitchell, L. A., M.B. ..	Jubbulpore, India	Leave	—
Martin, C. B., M.B. ..	Netley	Adjutant	—
McNaught, J. G., M.D. ..	Wynberg, S. Africa ..	Sanitary Officer, Cape Colony ..	b.
McDermott, T., M.B. ..	Lucknow, India	Specialist in Ophthalmology, Eastern Command	k.

Name.	Station.	Appointment.	Specialist Certificates in
More L. P., M.B.	Murree, India	Offi. Personal Assistant to P.M.O., Northern Command	—
Moore, G. A., M.D.	Woolwich	Med. Off. R.M. Academy	g.
Marder, N.	Netley		—
Mansfield, G. S., M.B.	St. George's, Bermuda	In charge Military Hospital	—
Mangin, F. M.	Up Park Camp, Jamaica	Company Officer	k.
McMunn, J. R.	Pretoria, S. Africa	Staff Officer to P.M.O., S. Africa	f.
Master, A. E., M.B.	Cottonera, Malta		g.
Morgan, C. K., M.B.	Khartoum, Egypt	Officer in charge Military Hospital	o.
Milner, A. E.	Ootacamund, India	Staff Officer, Army Bearer Corps, Secunderabad and Burma Divi- sions, Specialist in Skiagraphy	o.
Maurice, G. T. K.	Muttra, India		m.
O'Reilly, H. W. H., M.B.	Wynberg, S. Africa	Skiagraphist	—
Poole, W. C., M.B.	Buttevant	Officer in charge Military Hospital	b.
Pocock, H. I.	Aldershot	Specialist in Dental Surgery	d.
Paterson, J., M.B.	Irvine	Officer in charge Field Hospital	—
Peeke, H. S.	Campbellpore, India	Military and Can- tonment Hospital	—
Parry, H. J., M.B., D.S.O.	Maritzburg, South Africa	Officer in charge Military Hospital	—
Powell, E. E.	Aldershot	Company Officer, No. 1 Company	—
Pearse, A.	Chester	Sanitary Offi., Western Command	b. p.
Porter, F. J. W., D.S.O.	Colchester		—
Pilcher, E. M., M.B., F.R.C.S.Eng., D.S.O.	Woolwich		j.
Pollock, C. E.	Valetta, Malta	Leave	e. o.
Prynne, H. V.	Gibraltar		k.
Profeit, C. W., M.B.	Ambala, India		g.
Perry, S. J. C. P.	Brighton	Officer in charge Military Hospital	o.
Raymond, G., M.B.	Wellington, India	Sanitary Officer, Secunderabad and Burma Divisions	b.
Reily, A. Y., M.B.	Mandalay, India	Officer in charge Military Hospital	—
Ritchie, J., M.B.	Woolwich	" " Auxiliary	—
Rawnsley, G. T.	Mount Auriol, W. Africa	" " Military	—
Reilly, C. W.	Calcutta, India	" " Brigade Lab.	b.
Robinson, O. L.	Gibraltar		—
Read, H. W. K.	Meiktila, India	Officer in charge Military Hospital	—
Rivers, J. H.	Woolwich	Company Offi. 34th Coy. R.A.M.C.	o.
Scott, B. H.	Murree, India	Sanitary Offi., Northern Command	b.
Stiell, D., M.D.	Dinapore, India	Officer in charge Military Hospital	—
Stone, C. A., M.D.	Dover	Company Officer	b.
Smith, F., D.S.O.	Benares, India	Officer in charge Military Hospital	b.
Smithson, A. E., M.B.	Harrismith, S. Africa		b.
Shanahan, D. D.	Tipperary	Officer in charge Military Hospital	—
Stalkartt, C. E. G., M.D.	Gosport		—
Stanistreet, G. B., M.B.	Salisbury	Staff Officer to Principal Medical Officer, Southern Command	—
Slyter, E. W., M.B.	Lucknow, India	Leave	—
Symons, F. A., M.B.	Millbank, London	Registrar	—
Samman, C. T.	Shorncliffe		n. b.
Spencer, C. G., M.B., F.R.C.S.Eng.	R.A.M. College, London	Professor of Military Surgery	j.
Silver, J. P., M.B.	Watford, Bermuda		—
Sweetnam, W. S.	Warley		—
Steel, E. B., M.B.	Aldershot	Officer command. "C" Company, Depôt R.A.M.C.	n.
Staddon, H. E.	Vocoas, Mauritius	In charge Effective European Troops and Non-dieted Hospital	—
Smith, L. F., M.B.	Royal Arsenal, Woolwich		f. b.
Thurston, H. C., C.M.G.	War Office, London	Headquarters Staff	—
Thacker, R. C.	Karachi, India	Officer in charge Followers' Hosp.	—
Thomson, J., M.B.	Woolwich	Offi. in charge Mil. Families' Hosp.	—
Tate, G. W., M.B.	Finner Camp	" " Non-dieted	b.

Name	Station.	Appointment.	Specialist Certifi- cates in
Tyacke, N.	Dalhousie, India ..	Officer in charge Military Hospital	—
Thurston, H. S. ..	Millbank, London ..	Company Officer	—
Thompson, A. G., M.B. ..	Cardiff .. ..	.. .. .	b.
Taylor, W. J., M.B. ..	Kamptee, India ..	Officer in charge Brigade Labora- tory and Cantonment Hospital	o.
Tyrrell, A. F.	Gibraltar .. ..	.. .. .	—
Tibbits, W., M.B. ..	Meerut, India .. ..	.. .. .	—
Thom, G. St. C., M.B. ..	Ferozepore, India..	.. .. .	l. g.
Watson, J. J. C., M.D., C.I.E.	Portsmouth .. ..	.. .. .	—
Watson, A. O. C., M.B. ..	Aberdeen	Officer in charge Military Hospital	b.
Weir, J. C., M.B.	London	Sanitary Officer, London District	b.
Wright, A.	Falmouth .. ..	.. .. .	—
Winter, H. E.	Colaba, India .. ..	.. .. .	—
Wav, L.	Allahabad, India ..	.. .. .	—
Williams, E. McK. ..	Tanglin, S. Setts..	Officer in charge Military Hospital	—
Whitstone, C.W. H., M.B.	Hounslow .. ..	.. .. .	—
Wade-Brown, F. J. ..	London	In charge Kensington Barracks..	—
Withers, S. H., M.B. ..	York .. ..	.. .. .	—
Williams, E. M.	Valetta, Malta	Off. in charge Mil. Families' Hosp.	h.
Young, C. A.	Ballykinler Camp..	„ „ Non-dieted Hosp.	—

CAPTAINS.

Archer, S. A.	Dublin	Specialist in Ophthalmology ..	k.
Addams-Williams, L. ..	Standerton, S. Africa ..	Sanitary Officer, Company Officer and Anæsthetist	—
Archer, G. J. S., M.B. ..	Belfast	Specialist in Operative Surgery, and Company Officer	—
Ashe, F.	Shorncliffe.. ..	.. .. .	—
Anderson, H. S.	Citta Vecchia, Malta ..	Officer in charge Military Hospital	—
Adye-Curran, W. J. P. ..	Bulford	Specialist in Operative Surgery, Southern Command	—
Argles, R. L.	Multan, India .. ..	.. .. .	—
Adderley, A. C.	Leeds	Officer in charge Military Hospital	—
Aylen, E. V.	Gosport .. ..	.. .. .	—
Adye-Curran, S. M. ..	Kinsale .. ..	.. .. .	—
Ainsworth, R. B.	Wellington, India ..	Leave	—
Ahern, D.	Karachi, India .. ..	.. .. .	—
Bliss, E. W.	Portsmouth .. ..	.. .. .	j.
Birrell, E. T. F., M.B. ..	Aldershot	Adjutant, Depôt, R.A.M.C. ..	k.
Bowen, A. W. N.	Cardiff	Officer in charge Military Hospital	—
Browne-Mason, H. O. B.	R.A.M. College .. ..	.. .. .	—
Berne, J. G.	Colaba, India	Officer in charge Brigade Lab., Specialist in Otology	g.
Bourke, E. A.	Bloemfontein, S. Africa ..	.. .. .	b. f.
Brodrigg, E.	Kilkenny	Officer in charge Military Hospital	—
Barrow, H. P. W.	R.A.M. College .. ..	.. .. .	—
Brakenridge, F. J. ..	Attached Egyptian Army	.. .. .	b.
Blackwell, W. R.	Dublin	Company Officer	—
Butler, S. G.	Aldershot	Specialist in Operative Surgery, Cambridge Hospital	j.
Bond, J. H. R.	York .. ..	.. .. .	—
Babington, M. H. ..	Netley	Clinical Pathologist	—
Buist, James M., M.B. ..	Aldershot .. ..	.. .. .	—
Biggam, T., M.B.	Aden .. ..	.. .. .	—
Baker, W. L.	Aldershot .. ..	.. .. .	—
Bennett, W., M.B.	R.A.M. College .. ..	.. .. .	—
Bartlett, B. S.	Norwich	Officer in charge Military Hospital	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Bennett, E.	Portsmouth .. ..	.. ..	—
Brown, R. T., M.D. ..	Colchester	San. Offi., Area North of Thames ..	b.
Bennett, W. L., M.B., F.R.C.S. Edin.	R.A.M. College .. ..	.. ..	—
Burke, B. B.	Woolwich	Offi. in charge Women & Children ..	—
Baillie, G., M.B.	Curragh .. ..	.. ..	—
Black, R. B., M.B. ..	Attached Egyptian Army ..	.. ..	—
Brunskill, J. H., M.B. ..	Rangoon, India	Offi. in charge Bacteriological Lab. ..	—
Bateman, H. R.	R.A.M. College .. ..	.. ..	—
Bransbury, H. A.	Tidworth .. ..	.. ..	—
Barbour, J. H., M.B. ..	R.A.M. College .. ..	.. ..	—
Bostock, J. S., M.B. ..	Portsmouth .. ..	.. ..	—
Beatty, M. C., M.B. ..	Deolalee, India	Offi. in charge Cantonment Hosp. ..	b.
Balck, C. A. J. A., M.B. ..	Rawalpindi, India ..	.. ..	—
Bagshawe, H. V.	Shwebo, India	Officer in charge Followers' Hosp. and Staff Surgeony ..	—
Browne, W. W.	Maymyo, India .. ..	.. ..	—
Bell, J. G., M.B.	Jhansi, India .. ..	.. ..	—
Bridges, R. H.	Madras, India	Leave	—
Brown, G. H. J., M.B. ..	Delhi, India .. ..	.. ..	—
Bramhall, C.	Quetta, India .. ..	.. ..	—
Cochrane, E. W. W., M.B.	Aldershot	Sanitary Officer, A. C.	c.
Clements, R. W., M.B. ..	Manchester	Adjutant, Manchester Companies o. R.A.M.C. (Volunteers) ..	b. p.
Corkery, M. P.	Millbank, London ..	.. ..	—
Clarke, T. H. M., M.B., C.M.G., D.S.O.	Naini Tai, India .. ..	.. ..	—
Cummins, S. L., M.B. ..	Attached Egyptian Army ..	.. ..	—
Carroll, F. F., M.B. ..	Woolwich .. ..	.. ..	j.
Carter, G. B., M.B. ..	Madras, India	Officer in charge Fort Dispensary ..	—
Collingwood, P. H. ..	Victoria, S. China ..	Company Officer	—
Crisp, G. B.	Netley	Anæsthetist	—
Cowan, J., M.B.	Mabanta, W. Africa ..	Officer in charge Military Hospital ..	c.
Curme, D. E.	Bellary, India .. ..	.. ..	—
Cunningham, R. A., M.B.	Wool Camp .. ..	.. ..	—
Crawford, V. J.	Edinburgh	Staff Officer to P.M.O.	—
Chopping, A.	Peshawar, India .. ..	.. ..	—
Connolly, E. P.	Dunree Camp	Officer in charge Non-dieted Hosp. ..	—
Cumming, C. C., M.B. ..	Rawalpindi, India ..	.. ..	—
Carylon, A. F. .. ..	.. ..	Sick leave	—
Croly, W. C.	Cannanore, India ..	.. ..	—
Cotton, F. W.	R.A.M. College .. ..	.. ..	—
Carroll, G. .. ..	.. ..	.. ..	—
Churton, J. G. .. ..	.. ..	.. ..	—
Cuthbert, J. M., M.B. ..	Edinburgh .. ..	.. ..	—
Carr, C. H., M.D.	Quetta, India .. ..	.. ..	—
Crosthwait, W. S.	Thayetmyo, India ..	.. ..	—
Cautley, J. B.	R.A.M. College .. ..	.. ..	—
Cowey, R. V.	Mill Hill	Officer in charge Military Hospital ..	—
Clarke, J. B., M.B. ..	Halifax .. ..	.. ..	—
Cotterill, L.	Maymyo, India .. ..	.. ..	—
Craig, B. A.	Curragh .. ..	.. ..	—
Crossley, H. J.	Calicut, India	Officer in charge Military Hospital ..	—
Clarke, F. A. H.	Meerut, India .. ..	.. ..	—
Conway, J. M. H.	Jullundur, India ..	Officer in charge Cantonmt. Hosp. and Staff Surgeon ..	—
Coates, T. S., M.B. ..	Neemuch, India .. ..	.. ..	—
Carmichael, J. C. G., M.B.	Poonamallee, India ..	.. ..	—
Carmichael, D. G., M.B.	Wellington, India ..	.. ..	—
Crawford, J. M. M. ..	Lahore Cant., India ..	.. ..	—
Collins, R. T.	Roorkee, India	Staff Surgeon	—
Delap, G. G., D.S.O. ..	Millbank, London ..	.. ..	—
Douglas, H. E. M., V.C., D.S.O.	Lucknow, India .. ..	.. ..	b.

Name.	Station.	Appointment.	Specialist Certifi- cates in
Dennis, B. R., M.D.	R.A.M. College	.. .. .	—
Dorgan, J., M.B.	Fermoy	.. .. .	—
Douglass, P. C.	Devonport	Anæsthetist	—
Duffey, A. C., M.D.	Rosse's Point Camp	Officer in charge Troops	—
Davidson, H. A., M.B.	Secunderabad, India	.. .. .	b.
Davis, W.	Bareilly, India	.. .. .	—
Davidson, P., M.B., D.S.O.	Rawalpindi, India	Officer in charge Cantonmt. Hosp.	—
Dawson, F. W. W., M.B.	Wynberg, Cape Colony	.. .. .	—
Dunbar, B. H. V., M.D.	Jubbulpore, India	Leave	—
Duguid, J. H., M.B.	Blakan Mati, S. Setts.	Officer in charge Military Hospital	—
Dudding, T. S.	Bloemfontein, S. Africa	Leave	—
Dunkerton, N. E.	Potchefstroom, S. Africa	.. .. .	—
Ellery, E. E.	Devonport	Specialist in Operative Surgery, Southern Command	—
Elsner, O. W. A.	Limerick	Anæsthetist	—
Ensor, H., M.B., D.S.O.	Attached Egyptian Army	.. .. .	—
Evans, C. R.	Newcastle-on-Tyne	Officer in charge Military Hospital	—
Ellery, R. F.	Bodmin	" " " "	—
Ellis, W. F.	Multan, India	.. .. .	—
Forrest, J. V., M.B.	Woolwich	Adjutant, Royal Herbert Hospital	—
Fuhr, R. S. H., D.S.O.	Sialkot, India	.. .. .	—
Fell, M. H. G.	Liverpool	Recruiting	—
Falkner, P. H.	Chester	.. .. .	—
Foster, J. G., M.B.	Magilligan Camp	Officer in charge Non-dieted Hosp.	—
Ford, E. G., M.B.	Lichfield	.. .. .	—
Fawcus, H. B., M.B.	R.A.M. College	.. .. .	b.
Fielding, T. E., M.B.	"	.. .. .	—
Furnivall, C. H.	Shoeburyness	.. .. .	—
Fitzgerald, Fitz G. G.	Bathau, W. Africa	Officer in charge Military Hospital	—
Fry, W. B.	Canterbury	.. .. .	—
Fleming, C. E., M.B.	Templemore	Officer in charge Military Hospital	—
Fawcett, R. F. M.	Port Lokkah, W. Africa	.. .. .	—
Falkner, M. W.	Fatehgarh, India	Temp. Officer in charge Military Hospital	—
Foulds, M. F.	Aden	.. .. .	—
Ffrench, E. G., M.D.	Chatham	Offi. in charge Detention Barracks	—
Foster, R. L. V., M.B.	Egypt	.. .. .	—
Franklin, R. J.	Benares, India	Leave	—
Fawcett, H. H. J.	Harrismith, S. Africa	Sanitary Officer	—
Gwynn, W. P.	Newport	Officer in charge Military Hospital	—
Gallie, J. S.	Ahmednagar, India	.. .. .	—
Gill, J. G.	Netley	.. .. .	—
Goddard, G. H.	Dover	.. .. .	—
Goldsmith, G. M., M.B.	Lichfield	.. .. .	—
Greenwood, A. R.	Aldershot	.. .. .	—
Goodwin, W. R. P.	Murree, India	Leave	—
Gibson, A. W.	Chatham	.. .. .	—
Gatt, J. E. H., M.D.	Middelburg, Transvaal	.. .. .	—
Gray, A. C. H., M.B.	Uganda, E. Africa	Seconded with Foreign Office	—
Glanvill, E. M., M.B.	Harrismith, S. Africa	.. .. .	—
Hayes, E. C.	Colombo, Ceylon	Sanitary Officer	b. k.
Hooper, A. W., D.S.O.	Quetta, India	.. .. .	—
Hewetson, H.	Fort Canning, S. Setts.	Officer in charge Military Hospital and Sanitary Officer	a. b.
Hudleston, W. E.	Mhow, India	Specialist in Specific Fevers and Officer in charge Station Staff	b. f.
Hopkins, C. H.	Belgaum, India	Specialist in Specific Fevers and Officer in charge Cantonment Hospital	f.
Hall, S. O.	Secunderabad, India	Spec. in Midwifery & Gynæcology	h.
Heffernan, F. J. C.	Lucknow, India	.. .. .	—
Herrick, H.	Richmond	Officer in charge Military Hospital	—
Hewitt, E. P.	R.A.M. College	.. .. .	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Hodgson, J. E. ..	Ranikhet, India ..	.. .. .	—
Houghton, J. W. H., M.B.	Millbank, London ..	.. .. .	b.
Harvey, D., M.B. . .	India	Temporary Civil Employment in Central Research Institute	a.
Humphrey, L.	Dover .. ..	.. .. .	j.
Harrison, L. W., M.B. ..	Murree, India	Staff Surgeon	—
Harvey, F.	Tower Hill, W. Africa ..	Sanitary Officer	b. c.
Hime, H. C. R., M.B. ..	Aldershot	Offi. command. "B." Coy., Depot, R.A.M.C., Assistant Instructor, R.A.M.C. School of Instruction, and Specialist in Ophthalmology at Aldershot	k.
Hartigan, J. A., M.B. ..	R. A.M. College .. ..	.. .. .	—
Hyde, D. O., M.B. ..	Khandalla, India.. ..	Officer in charge Military Hospital	—
Hamerton, A. E., D.S.O.	Millbank, London ..	.. .. .	—
Houghton, G. J.	Barrakpore, India ..	Officer in charge Cantonmt. Hosp., and Civil Surgeon	—
Henderson, P. H., M.B. .	Weedon	Officer in charge Military Hospital	—
Hardy, F. H.	Colchester .. ..	.. .. .	h.
Hunt, R. N., M.B. ..	Finner Camp .. ..	.. .. .	—
Howley, H. E. J. A. ..	Armagh	Officer in charge Military Hospital	—
Hull, A. J.	Jhansi, India	Staff Surgeon	—
Harding, D. L.	Secunderabad, India ..	.. .. .	—
Hyde, P. G., M.B. ..	Glenbeigh Camp .. ..	.. .. .	—
Harvey, W. J. S. ..	Wilberforce, W. Africa ..	Officer in charge Military Hospital	—
Hayes, A. H.	Ambala, India .. ..	.. .. .	—
Harding, N. E. J., M.B. .	Rangoon, India	Officer in charge Followers' Hosp. and Staff Surgeony	—
Holden, C. W.	Tidworth .. ..	.. .. .	b. p.
Harty, T. E.	Calcutta, India .. ..	.. .. .	—
Hughes, G. W. G. ..	Attached Egyptian Army ..	.. .. .	—
Hanafin, P. J.	Pretoria, S. Africa ..	.. .. .	b.
Hildreth, H. C., F.R.C.S.	Wellington, India ..	Officer in charge Cantonmt. Hosp.	—
Edin.			
Inkson, E. T., V.C. ..	Woolwich	Adj't., Woolwich Coys. R.A.M.C. (Volunteers)	—
Irvine, F. S., M.B. ..	Transvaal	Seconded for service under the Colonial Office	—
Irwin, A. W. A.	Kildare	Officer in charge Non-dieted Hosp.	—
Ievers, O., M.B.	Middelburg, Cape Colony	" " Military Families' Hospital	—
Jameson, A. D.	R. A.M. College .. ..	.. .. .	—
Johnson, J. T., M.D. ..	Newcastle-on-Tyne ..	.. .. .	—
Jones, J. L.	Kandy, Ceylon .. ..	.. .. .	—
Knox, E. B., M.D. ..	Simla, India	Leave	—
Kennedy, J. C., M.B. ..	Millbank, London ..	Officer in charge Wellington Bks.	—
Kelly, W. D. C., M.B. ..	Rawalpindi, India ..	.. .. .	—
Kelly, H. B., M.B. ..	Bangalore, India ..	.. .. .	—
Kempthorne, G. A. ..	Lahore Cantonmt., India	Road Medical Officer, Pathankot and Dalhousie Road	—
Lowsley, M. M.	Aldershot .. ..	.. .. .	h.
Lauder, T. C., M.B. ..	Glencorse	Officer in charge Section Mil. Hos.	b.
Leake, J. W.	Sheffield	" " Military Hospital	a.
Lloyd, R. H.	Leith Fort and Piershill..	Officer in Medical charge Troops	—
Langstaff, J. W. ..	Pembroke Dock .. ..	.. .. .	b.
Lloyd, L. N., D.S.O. ..	London	Adjutant, London Coys. R.A.M.C. (Volunteers)	—
Lauder, F. P.	Stobs Camp	Officer in charge Field Hospital	—
Lelean, P. S., F.R.C.S.	Bareilly, India	In charge Brigade Lab., Specialist in Operative Surgery	j.
Eng.			
L'Estrange, F. F. Q. ..	Manchester	Officer in charge Military Hospital	—
Lambelle, F. W., M.B. ..	Blair Atholl .. ..	.. .. .	—
Long, H. W., M.B. ..	Ambala, India .. ..	.. .. .	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Lambert, F. C.	Potchefstroom, S. Africa ..	Sanitary Officer	—
Lewis, S. E., M.B. ..	Standerton, S. Africa ..	.. ..	—
Morris, A. H.	W. African leave .. ..	.. ..	b. c.
MacDougall, A. J., M.B. ..	Glasgow	Adjutant, Glasgow Coys. R. A.M.C. (Volunteers)	c
Marriott, E. W. P. V. ..	Gibraltar .. ..	.. ..	o.
McKessack, P., M.B. ..	Edinburgh	Company Officer and Recruiting	c.
McCarthy, J. McD., M.B.	Balkanu, W. Africa ..	.. ..	a. b.
Martin, H. G.	Colaba, India .. ..	.. ..	h.
Macpherson, J. D. G., M.B.	Aldershot	Officer commanding "A" Com- pany, Depot, R.A.M.C.	—
Mainprise, C. W. .. ..	" .. ..	.. ..	—
Morris, J. I. W.	Fort George	Officer in charge Military Hospital	—
MacKenzie, T. C., D.S.O.	Attached Egyptian Army	.. ..	—
Morton, H. M., M.B. ..	Aldershot .. ..	.. ..	—
Matthews, J.	Woolwich	Specialist in Ophthalmology ..	k.
McLoughlin, W. M. ..	Aldershot .. ..	.. ..	—
Merry, F. H., M.B. ..	"	Sick leave	—
MacLaughlin, A. M., M.B.	Windsor .. ..	.. ..	a.
Martin, J. F., M.B. ..	Poona, India	Instructor in Practical Sanitation	—
McDonnell, E., M.B. ..	Aldershot	Company Officer, No. 2 Company	—
McLennan, F., M.B. ..	R.A.M. College .. ..	.. ..	—
Murphy, J. P. J., M.B. ..	Fleetwood	Officer in charge Military Hospital	—
McGrigor, H. J., M.B. ..	Mabanta, W. Africa ..	.. ..	b. e.
Myles, C. D., M.B. ..	Nowgong, India	Temp. Officer in charge Mil. Hosp.	—
Mitchell, A. H. McN. ..	Trawsfynydd	Officer in charge Military Hospital	—
McMunn, A.	Tutogh, India	"	—
McKenzie, J. M. B. ..	Dinapore, India	"	—
Meadows, S. M. W. ..	Rawalpindi, India ..	Staff Surgeon "A"	—
Meldon, J. B.	Bangalore, India .. ..	.. ..	—
MacNicol, R. H., M.B. ..	Secunderabad, India ..	.. ..	—
McEntire, J. T., M.B. ..	Bloemfontein, S. Africa ..	.. ..	—
MacDowell, W. MacD. ..	Kamptec, India .. ..	.. ..	—
Nickerson, W. H. S., V.C., M.B.	Dublin .. ..	.. ..	b. c.
Nickerson, G. S., M.B. ..	Attached Egyptian Army	.. ..	—
Norrington, H. L. W. ..	Warrington	Officer in charge Military Hospital	—
Nicholls, H. M., M.B. ..	Kinsale	"	—
Norman, H. H.	Queenstown	"	—
O'Grady, S. de C., M.B. ..	Dublin .. ..	.. ..	a.
O'Gorman, C. J., D.S.O. ..	Shorncliffe .. ..	.. ..	—
O'Flaherty, A. R.	Woolwich .. ..	.. ..	—
Ormsby, G. J. A., M.D. ..	Kilbride Camp .. ..	.. ..	—
O'Reilly, P. S.	R.A.M. College .. ..	.. ..	—
Odlum, W. H.	Nasirabad, India	Officer in charge Military Hospital and Brigade Laboratory	—
O'Donoghue, D. J. F. ..	Maryboro' Heath Camp ..	.. ..	—
Ommanney, F. M. M. ..	Rawalpindi, India ..	.. ..	—
Osburn, A. C.	Agra, India	Leave	—
Probyn, P. J., D.S.O., M.B.	St. John's Wood, London	Officer in charge Military Hospital	—
Poe, J., M.B.	Aldershot .. ..	.. ..	—
Penny, F. S., M.B. ..	London	Officer in charge Chelsea Barracks	—
Parker, L. F. L.	"	Sec. of Com. on Phys. Training ..	c. b.
Packer, H. D.	Portsmouth .. ..	.. ..	c.
Palmer, H. K.	Colchester	Company Officer and Officer in charge Detention Barracks	—
Palmer, F. J.	Dublin .. ..	.. ..	j.
Prescott, J. J. W., D.S.O.	Devonport	Specialist in Ophthalmology ..	k.
Parry, F. M., M.B. ..	R.A.M. College .. ..	.. ..	—
Powell, J., M.B.	Woolwich .. ..	.. ..	—
Purser, L. M., M.B. ..	" .. ..	.. ..	—
Popham, R. L.	Dublin .. ..	.. ..	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Power, W. M.	Kamptec, India .. ..	.. .. .	—
Pinches, H. G.	Allahabad, India	Staff Surgeon	—
Parsons, A. R. C.	Perham Down Camp	Officer in charge Detention Hosp.	—
Powell, E. W.	Belgaum, India	" " Brigade Lab.	c.
Parkes, E. E., M.B.	Sheerness	" "	—
Potter, T. J.	Aldershot	" "	b.
Pennefather, E. M.	Maymyo, India	" "	—
Patch, B. G.	Ambala, India	" "	—
Powell, J. E.	Bareilly, India	Staff Surgeon	—
Pallant, S. L.	Jubbulpore, India	Officer in charge Station Staff	—
Riddick, G. B.	Calcutta, India	" "	—
Rattray, M. MacG., M.B.	Bangalore, India	" "	—
Ross, N. H., M.B.	Mount Auriol, W. Africa	Officer in charge Military Hospital	c.
Rutherford, N. J. C., M.B.	Dover	" "	—
Richards, F. G.	Netley	" "	—
Roch, H. S.	Cork	Company Officer and Anæsthetist	c.
Robinson, J. H.	Alderney	Officer in charge Military Hospital	—
Ronayne, C. R. L., M.B.	Strensall	" " " "	—
Riach, W., M.D.	Sheffield	" "	b.
Ryan, E.	Valetta, Malta	Company Officer	—
Rowan-Robinson, F. E.	Colaba, India	" "	—
Ritchie, T. F., M.B.	Ferozepore, India	" "	—
Rogers, H., M.B.	Multan, India	" "	—
Reed, G. A. K. H.	Saugor, India	Temp. Officer in charge Mil. Hosp.	—
Rutherford, R., M.B.	Poona, India	" "	—
Ranking, R. M., M.B.	Victoria, S. China	" "	—
Richmond, J. D., M.B.	Quetta, India	" "	—
Statham, J. C. B.	Pretoria, S. Africa	Bacteriologist	b. c. p.
Swabey, M.	Preston	Recruiting	m.
Stammers, G. E. F.	Tidworth	Sanitary Officer, Eastern Area, Southern Command	—
Stallard, H. G. F.	R.A.M. College	" "	—
Selby, R., M.B.	Meerut, India	Specialist in Dermatology, Plague Officer, Cantonment	e.
Scott, A. L.	Portland	Officer in charge Military Hospital	—
Sloan, J. M., M.B., D.S.O.	Mary Hill	" "	a.
Scarlett, W. W.	Edinburgh	Leave	—
Simson, H.	Millbank, London	" "	—
Seeds, A. A., M.D.	Aldershot	Anæsthetist, Connaught Hospital	—
Siberry, E. W.	Bordon	" "	—
Smith, C. S., M.B.	Curepipe, Mauritius	In charge Military Families' Hosp.	—
Safford, A. H.	R.A.M. College	" "	—
Sewell, E. P., M.B.	London	Sec. to P.M.O. London District	—
Straton, C. H.	Dover	" "	—
Stevenson, T. H., M.B.	Chatham	Anæsthetist	—
Spiller, W. M. H., M.B.	Allahabad, India	In charge Brigade Laboratory	b.
Shea, H. F., M.B.	Millbank, London	" "	—
Stephens, F. A.	Ayr	Officer in charge Military Hospital	—
Steele, W. L.	Lucknow, India	" "	—
Sparkes, W. M. B.	Portsmouth	" "	—
Smith, S. B., M.B.	Ambala, India	Officer in charge Cantonment Hospital, and Staff Surgeon	—
Skinner, R. McK.	Tower Hill, W. Africa	" "	—
Sheehan, G. F.	Curragh	Company Officer	—
Sampey, A. W.	Mount Auriol, W. Africa	" "	b.
Smallman, A. B., M.B.	Secunderabad, India	In charge Brigade Lab., Specialist in Prevention of Disease	—
Storrs, R.	Ambala, India	" "	—
Seccombe, J. W. S.	" "	" "	b.
Skelton, D. S.	Tower Hill, W. Africa	Off. in charge Women and Chil- dren, and Anæsthetist	—
Stanley, C. V. B., M.D.	Attached Egyptian Army	" "	—
Swanzy, H. H.	Cawnpore, India	Officer in charge Departmental Followers' Hospital, Staff Sur- geon, and Cantonment Hospital	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Stack, H. T., M.B.	Sitapur, India	Officer in charge Cantnt. Hospital	—
Sylvester-Bradley, C. R.	Poona, India	" Cantnt. Hosp. and No. 2 Section Hosp. (Wanowrie)	—
Thorp, A. E.	Tregantle	Officer in charge Military Hospital	—
Taylor, H. S.	R.A.M. College	"	—
Tobin, J.	Fethard	Officer in charge Non-dieted Hosp.	—
Thorpe, L. L. G.	Jubbulpore, India	" Gun Car. Factory	—
Thomson, C. G.	Lahore Cantonment, India	"	—
Tyndale, W. F., M.B., C.M.G.	Lucknow, India	Leave	—
Unwin, T. B., M.B.	Cork	"	—
Waring, A. H.	Lahore Cantonment, India	"	o.
Ward, W. A.	Rochester Row, London	"	—
Wanhill, C. F.	Edinburgh	San. Officer, Scottish Command	b. c.
Watts, B.	Fermoy	Off. in charge Mil. Families' Hosp.	h.
Weld, A. E.	Curragh	In charge Military Families' Hosp.	h.
Walton, H. B. G.	Pontefract	Officer in charge Military Hospital	—
Winkfield, W. B.	Gosport	"	—
Wroughton, A. O. B.	Malapuram, India	"	—
Woodside, W. A.	York	Company Officer, Anæsthetist and X-ray work	—
Webb, A. L. A.	R.A.M. College	"	—
Winslow, L. F. F.	Gibraltar	Anæsthetist	—
Wood, L.	Woolwich	"	—
Wingate, B. F.	Canterbury	"	—
Walker, F. S.	Perozepore, India	"	—
Waring, A. D., M.B.	R.A.M. College	"	—
Weston, A. F.	Chatham	"	—
Waters, W. J.	Kailana, India	"	—
Whelan, J. F., M.B.	Peshawar, India	"	—
West, J. W., M.B.	Ballyliffen Camp	Officer in charge Non-dieted Hosp.	—
Worthington, E. S.	Agra, India	Leave	—
Wells, A. J. W.	Rangoon, India	"	—
Woodley, R. N.	Cork	"	—
Winder, J. H. R., M.D.	Forrest, Malta	"	—
Wilson, R. C.	Dundalk	Officer in charge Military Hospital	—
Williamson, A. J., M.B.	Aden, India	" Brigade Lab.	—
Walker, N. D., M.B.	Quetta, India	"	—
Webb, H. G. S.	Lahore, India	Officer in charge Divisional Lab.	—
Winder, M. G.	Pretoria, S. Africa	Company Officer	—
Wood, A. E. B., M.B.	Fyzabad, India	Officer in charge Cantonmnt Hosp.	—
Webster, J. A. W.	Purandhar, India	" Military Hospital	—
Wilmot, R. C.	Poona, India	"	—
Watson, D. P., M.B.	Karachi, India	"	—
Wetherell, M. C.	Campbellpore, India	"	—
Wright, T. J.	Maymyo, India	"	b.
Young, A. H. O.	St. George's, Bermuda	Officer in charge Women and Children	—

LIEUTENANTS.

Anderson, R. G.	Gibraltar	"	—
Arthur, A. S., M.B.	Nowshera, India	Officer in charge Cantonment Hos.	—
Ahern, M. D.	Perozepore, India	"	—
Anderson, J. A., M.B.	Bloemfontein, S. Africa	Company Officer	—
Anthonisz, E. G.	Wellington, India	"	—
Archibald, R. G., M.B.	Aldershot	On probation	—
Amy, A. C., M.B.	"	"	—
Aviss, W. G.	"	On probation	—
Andrews, L. A. A.	"	"	—
Bousfield, L., M.B.	Attached Egyptian Army	"	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Bowle, S. C.	Poona, India	Specialist in Dental Surgery ..	—
Byam, W.	Cairo, Egypt .. ..	.. .. .	—
Beadnell, H. O. M. ..	Ambala, India .. ..	.. .. .	—
Buchanan, R. J. B. ..	Curepipe, Mauritius .. ..	.. .. .	b.
Booth, E. B., M.B. ..	Jhansi, India	Officer in charge Jhansi Fort ..	—
Brown, C. G.	Netley .. ..	.. .. .	—
Benson, W., M.B. ..	Rawalpindi, India .. ..	.. .. .	—
Bryden, R. A.	Bloemfontein, S. Africa ..	.. .. .	—
Blackwell, T. S.	Secunderabad, India .. ..	.. .. .	—
Bond, A. H.	Willsworthy Camp .. ..	.. .. .	—
Benett, A. M.	Bulford	Anæsthetist	—
Bradish, F. L.	Fermoy .. ..	.. .. .	—
Bracken, G. P. A. ..	Limerick .. ..	.. .. .	—
Boyce, W. W.	Oranmore Camp .. ..	.. .. .	—
Bell, W. J. S., M.B. ..	Lichfield .. ..	.. .. .	—
Bowle, C. W., B.A. ..	Felixstowe	Officer in charge Militia Camp ..	—
Bennett, J. A., M.B. ..	Peuzance .. ..	.. .. .	—
Browne, T. W.	Queenstown	Officer in charge Haulbowline ..	—
Beaman, W. K. .. ..	.. ..	On probation	—
Boyd, J. E. M. .. ..	.. ..	.. .. .	—
Cathcart, G. E.	Rawalpindi, India .. ..	.. .. .	—
Cahill, R. J., M.B. ..	Peshawar, India .. ..	.. .. .	—
Connell, H. B. .. ..	.. ..	Seconded with Foreign Office ..	—
Campbell, J., M.B. ..	Lucknow, India	Officer in charge Divisional Labor- atory, Specialist in Prevention of Disease	b.
Cordner, R. H. L. ..	Rawalpindi, India .. ..	.. .. .	—
Carter, H. St. M., M.D. ..	Crete .. ..	.. .. .	—
Churchill, G. B. F. ..	Chakrata, India .. ..	.. .. .	—
Cromie, M. J.	Poona, India	Leave	—
Cummins, A. G., M.B. ..	Curragh .. ..	.. .. .	—
Caddell, E. D., B.A., M.B.	Dublin .. ..	.. .. .	—
Corbett, D. M., B.A., M.B.	Curragh .. ..	.. .. .	—
Cooke, O. C. P.	Plymouth .. ..	.. .. .	—
Coutts, D., M.B.	Honiton Camp .. ..	.. .. .	—
Cassidy, C., B.A. ...	.. ..	On probation	—
Carlisle, G. .. ..	.. ..	.. .. .	—
Chapman, F. H. M. ..	.. ..	.. .. .	—
Carruthers, V. T., M.B.	.. ..	.. .. .	—
Casement, F., B.A., M.B.	.. ..	.. .. .	—
Douglass, J. H., M.D. ..	Bangalore, India	In charge Brigade Laboratory ..	b.
Dwyer, P., M.B.	Mhow, India	In charge Divisional Laboratory, Specialist in Prevention of Dis.	—
Davy, P. C. T., M.B. ..	Colchester .. ..	.. .. .	—
Doig, K. A. C.	Chaubuttia, India .. ..	.. .. .	—
Dunne, J. S.	Bareilly, India .. ..	.. .. .	—
Drew, C. M., M.B.	Caterham	Officer in charge Women and Children and Infectious Hosp.	—
De la Cour, G., M.B., B.S.	Millbank, London .. ..	.. .. .	—
Dawson, A., M.B.	Rochester Row, London ..	.. .. .	—
Dill, M. G., M.B.	Edinburgh .. ..	.. .. .	—
Denyer, C. H.	Millbank, London	On probation	—
Emerson, H. H. A., M.B.	Warwick Camp, Bermuda	Officer in charge Troops	—
Egan, W., M.B.	Hilsea .. ..	.. .. .	—
Edmunds, C. T.	Bordon .. ..	.. .. .	—
Edwards, G. B.	Tavistock Camp .. ..	.. .. .	—
Elliot, E. J., M.B.	Rolleston Camp	Officer in charge Detention Hosp.	—
Elliott, A. C., B.A., M.B.	.. ..	On Probation	—
Fairbairn, J., M.B.	Colaba, India .. ..	.. .. .	—
Fraser, A. N., M.B. ..	Victoria, S. China .. ..	.. .. .	—
Frost, A. T. .. ..	.. ..	.. .. .	—
Ferguson, G. E.	Alexandria, Egypt .. ..	.. .. .	—
Fawcett, C. E. W. S., M.B.	Bangalore, India .. ..	.. .. .	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Farrant, P.	Up Park Camp, Jamaica	.. .. .	—
Forrest, F. . . .	Norwich .. ..	.. .. .	—
Forsyth, W. H., M.B. ..	Croone Camp .. ..	.. .. .	—
Foster, J. R.	Woolwich .. ..	.. .. .	—
Fraser, A. D., M.B. ..	.. .. .	On probation	—
Fortescue, A. I., M.B. ..	.. .. .	.. .. .	—
Field, S. .. ..	.. .. .	.. .. .	—
Farebrother, H. W. ..	.. .. .	.. .. .	—
Grant, M. F.	Quetta, India .. ..	.. .. .	—
Garland, F. J., M.B. ..	Ahmednagar, India ..	Officer in charge Cant. Hospital.	—
Gater, A. W.	Attock, India .. ..	.. .. .	—
Gibbon, T. H., M.D. ..	Crete .. ..	.. .. .	—
Graham, J. H., M.B. ..	Cairo, Egypt	Anæsthetist	—
Gotelee, H. E. .. ..	.. .. .	On probation	—
Galwey, W. R., M.B. ..	Waterford .. ..	.. .. .	—
Gillatt, W. H., M.B. ..	Aldershot .. ..	.. .. .	—
Gibson, L. G. .. ..	.. .. .	.. .. .	—
Gibbon, E., B.A., M.B. ..	Deepcut and Blackdown ..	.. .. .	—
Galgey, R. C.	Tidworth .. ..	.. .. .	—
Gibson, H. G. .. ..	.. .. .	On probation	—
Gurley, J. H. .. ..	.. .. .	.. .. .	—
Hole, R. B., M.B. ..	Colaba, India .. ..	.. .. .	—
Harding, H., M.B. ..	Hyderabad, India .. ..	.. .. .	—
Hayes, G. S. C.	Devonport	Officer in charge Detention Bks.	—
Hallowes, R. C., M.B. ..	Cyprus .. ..	.. .. .	—
Harvey, G. A. D.	Tanglin, Straits Sett. ..	.. .. .	—
Heron, G. W.	Cairo, Egypt .. ..	.. .. .	—
Hoar, J. E.	Secunderabad, India ..	.. .. .	—
Holbrooke, C. D. M. ..	Poona, India .. ..	.. .. .	—
Humfrey, R. E.	Belgaum, India .. ..	.. .. .	—
Hastings, A. E. F. ..	Fyzabad, India .. ..	.. .. .	—
Honeybourne, V. C. ..	Dover .. ..	.. .. .	—
Howell, F. D. G. . . .	Lodmoor Camp .. ..	.. .. .	—
Heslop, A. H., M.B. ..	Ewshott	Officer in charge Detention Hosp.	—
Howell, H. L.	Woolwich .. ..	.. .. .	—
Hart, J. C., M.B. . . .	.. .. .	On probation	—
Irvine, A. E. S.	Middelburg, Transvaal ..	Officer in charge Military Hospital	—
Johnstone, D. P.	Bangalore, India .. ..	.. .. .	—
Jones, P. A.	Valetta, Malta .. ..	.. .. .	—
Johnson, V. G.	Woolwich	Anæsthetist	—
Johnson, B. .. ..	.. .. .	On probation	—
Jacob, A. H.	Millbank, London .. ..	.. .. .	—
Keane, M. . . .	Shahjahanpur, India ..	.. .. .	—
Kelly, C., B.A., M.B. ..	Netley .. ..	.. .. .	—
Kavanagh, E. J., M.B. ..	Maldon	Officer in charge Militia Camp ..	—
Lewis, R. R.	Secunderabad, India ..	.. .. .	—
Lucas, T. C., M.B. ..	Kirkee, India	In charge Ammunition Factory ..	—
Luxmoore, E. J. H. ..	Meerut, India .. ..	.. .. .	—
Low, N.	St. Thomas's Mount, India	Officer in charge Military Hospital	—
Lynch, J. P.	Lucknow, India .. ..	.. .. .	—
Lithgow, E. G. R. ..	Pretoria, S. Africa ..	.. .. .	—
Lewis, R. P.	Bloemfontein, S. Africa ..	.. .. .	—
Littlejohns, A. S. ..	R.A.M.C. College .. ..	.. .. .	—
Leslie, T. C. C.	Maritzburg, S. Africa ..	.. .. .	—
Lathbury, E. B.	Great Yarmouth	Officer in charge Military Hospital	—
Leslie, R. W. D.	Dover .. ..	.. .. .	—
Lochrin, M. J.	Curragh .. ..	.. .. .	—
Lunn, W. E. C., M.B. ..	R.A.M. College .. ..	.. .. .	—
Loughnan, W. F. B. ..	Copythorne Camp .. ..	.. .. .	—
Leahy, M. P., B.A., M.B. ..	.. .. .	On probation	—
Langrishe, J. du P., M.B. ..	.. .. .	.. .. .	—
Moore, E. H. M.	Wynburg, C. Colony ..	Anæsthetist	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Meaden, A. A.	Mhow, India .. ..	.. .. .	—
Mackenzie, J. F. C., M.B.	Meerut, India .. ..	.. .. .	—
Millar, C. R.	Kandy, Ceylon .. ..	.. .. .	—
Maughan, J. St. A. ..	Cottonera, Malta ..	.. .. .	—
Meredith, R. G., M.B. ..	"	Leave	—
McNeight, A. A., M.B. ..	Allahabad, India ..	.. .. .	—
Maydon, W. G., M.B. ..	Calcutta, India	Officer in charge Departmental Followers' Hospital	—
Moriarty, T. B.	Cawnpore, India .. ..	.. .. .	—
Moss, E. L.	Agra, India .. ..	.. .. .	—
McConaghy, W., M.B. ..	Pretoria, S. Africa ..	Anæsthetist	—
Marett, P. J.	Valetta, Malta .. ..	.. .. .	—
McCammon, F. A., M.B.	Mosney Camp	Officer in charge Non-dieted Hosp.	—
Morris, C. R. M., M.B. ..	Bere Island	" " " "	—
Mulligan, J. B. G.	Kilbride Camp .. ..	.. .. .	—
Mitchell, W., B.A., M.B.	York .. ..	.. .. .	—
McCarthy, D. T., M.B. ..	Netley .. ..	.. .. .	—
Mackenzie, D. F., M.B. ..	.. ..	On probation	p.
Middleton, E. M. ... ..	.. ..	" .. .. .	—
McEwen, O. R. .. ..	.. ..	" .. .. .	—
Noke, F. H.	Poona, India .. ..	.. .. .	—
Nealor, W. S.	Lebong, India .. ..	.. .. .	—
Nimmo, W. C.	Fyzabad, India .. ..	.. .. .	—
Newman, R. E. U., M.B.	Queenstown	Officer in charge Fort Carlisle ..	—
Otway, A. L., M.B.	Nasirabad, India	" " Cantonment Hosp.	—
O'Brien, C. W.	Peshawar, India .. ..	.. .. .	—
Ormrod, G., M.B.	Mandalay, India .. ..	.. .. .	—
O'Carroll, A. D., M.B. ..	Cottonera, Malta .. ..	.. .. .	—
O'Neill, E. M., M.B.	Wedgnoek Park Camp ..	Officer in charge Detention Hosp.	—
O'Grady, D. De C.	Dublin .. ..	.. .. .	—
O'Keeffe, J. J., M.B. ..	Portsmouth .. ..	.. .. .	—
O'Connor, R. D. .. ..	.. ..	On probation	—
Painton, G. R.	Up Park Camp, Jamaica..	.. .. .	—
Power, P., M.B. .. ..	" .. ..	.. .. .	—
Pascoe, J. S.	Khartoum, Egypt .. ..	.. .. .	—
Potts, E. T. M.D.	Pretoria, S. Africa ..	.. .. .	—
Priestley, H. E.	Gibraltar .. ..	.. .. .	—
Paine, E. W. M.	Larkhill Camp	Officer in charge Detention Hosp.	—
Phelan, E. C., B.A., M.B.	Shorncliffe .. ..	.. .. .	—
Purdon, W. B., M.B. .. ..	.. ..	On probation	—
Perry, H. M. J. .. ..	.. ..	" .. .. .	—
Rugg, G. F.	Colchester .. ..	.. .. .	—
Ryley, C.	Victoria, S. China	Sanitary Officer	b.
Russell, H. W., M.D. ..	Port Royal, Jamaica ..	Officer in charge Military Hospital	—
Richard, G. H.	Calcutta, India .. ..	.. .. .	—
Roberts, F. E.	Valetta, Malta .. ..	.. .. .	—
Rahilly, J. M. B., M.B. ..	Alexandria, Egypt .. ..	.. .. .	—
Rose, A. M., M.B.	Prospect, Bermuda	Sanitary Officer	b.
Rees, G. H., M.B.	Cairo, Egypt .. ..	.. .. .	—
Ritchie, M. B. H., M.B. ..	Rawalpindi, India .. ..	.. .. .	—
Robinson, T. T. H., M.B.	Aldershot .. ..	.. .. .	—
Rudkin, G. F. .. ..	.. ..	On probation	—
Sinclair, M., M.B.	Sialkot, India .. ..	.. .. .	—
Sidgwick, H. C., M.B. ..	Up Park Camp, Jamaica	.. .. .	—
Sherren, H. G.	Belgaum, India	Special duty with 2nd Leicester- shire Regiment	—
Seatchard, T.	Agra, India .. ..	.. .. .	—
Symons, V. H.	Bloemfontein, S. Africa ..	.. .. .	—
Sampson, F. C., M.B.	Simonstown, S. Africa ..	Officer in charge Troops	—
Smyth, R. S., M.B.	Dublin	Anæsthetist	—
Stewart, H. C., M.B.	Queenstown	Officer in charge Fort Camden ..	—
Sutcliff, A. A., M.B.	Winchester .. ..	.. .. .	—
Sexton, T. W. O.	Keadean Camp	Officer in charge Troops	—

Name.	Station.	Appointment.	Specialist Certifi- cates in
Sampson, P.	Longmoor .. ..	.. .. .	—
Scott, J. W. L.	Filleigh Camp .. ..	.. .. .	—
Smales, W. C.	Tidworth Pennings	Officer in charge Detention Hosp.	—
Stewart, P. S., M.B.	Clogheen	„ „ Non-dieted Ho-p.	—
Stevenson, G. H., M.B.	Dublin .. ..	.. .. .	—
Spencer, J. H., M.B. .. ..	.. ..	On probation	—
Sim, J. A. B., M.B.	Edinburgh .. ..	.. .. .	—
Scaife, C., B.A., M.D.	Ticknock Camp	Officer in charge Troops	—
Scott, T. H., M.B. .. ..	.. ..	On probation	—
Turner, F. J.	Karachi, India .. ..	.. .. .	—
Thomson, D. S. B., M.B.	Attached Egyptian Army .. ..	.. .. .	—
Turner, C. H.	Rawalpindi, India .. ..	.. .. .	—
Turnbull, J. A. .. ..	.. ..	.. .. .	—
Thurston, L. V.	Mhow, India	Leave	—
Thomson, C. P., M.D.	Cairo, Egypt .. ..	.. .. .	—
Thompson, R. J. C.	Pretoria, S. Africa .. ..	.. .. .	—
Tabuteau, G. G.	Jhansi, India .. ..	.. .. .	—
Tate, R. G. H., M.D.	Powers Court .. ..	.. .. .	—
Tough, F. W.	Aldershot	On probation	—
Thompson, W. I., B.A., M.D.	„	Anæsthetist, Cambridge Hospital	—
Turner, F. T. .. ..	.. ..	On probation	—
Vaughan, W. F. H.	Bellary, India .. ..	.. .. .	—
Vidal, A. C.	Aldershot .. ..	.. .. .	—
Whitehead, E. C., M.B.	Pretoria, S. Africa .. ..	.. .. .	—
Wiley, W., M.B.	Secunderabad, India .. ..	.. .. .	—
Wilson, H. T.	Rawalpindi, India .. ..	.. .. .	—
Winckworth, H. C.	Cottonera, Malta .. ..	.. .. .	—
Wallace, G. S., M.B.	Port Louis, Mauritius	Officer in charge Military Hospital and Sanitary Officer	b.
Weston, W. J.	Aldershot .. ..	.. .. .	—
Ware, G. W. W., M.B.	Lucknow, India .. ..	.. .. .	—
White, C. F., M.B. .. ..	„ .. ..	.. .. .	—
Wyatt, C. J., M.B.	Singapore .. ..	.. .. .	—
Williams, A. S.	Chichester	Officer in charge Military Hospital	—
Wood, J. L., B.A. .. ..	.. ..	On probation	—
Wilson, M. O., M.B. .. ..	.. ..	„ .. ..	—

MEDICAL OFFICERS OF THE HOUSEHOLD CAVALRY.

Rank.	Name.	Regiment.	Station.	Specialist Certifi- cates in
Surg.-Lieutenant-Colonel	Deeble, B. W. C.	1st Life Guards	Hyde Park	—
Surgeon-Major	Power, J. H.	2nd Life Guards	Regent's Park	—
„	Pares, B.	Royal Horse Guards	Windsor	—
Surgeon-Captain	Cowie, R. M.	2nd Life Guards	Regent's Park	—
„	Bodington, P. J., M.B.	Royal Horse Guards	Windsor	—
„	Lupton, A. C., M.B.	1st Life Guards	Hyde Park	—

MEDICAL OFFICERS OF THE BRIGADE OF GUARDS.

Rank.	Name.	Regiment.	Station.	Specialist Certifi- cates in
Brig.-Surg.-Lieut.-Col.	Harrison, C. E., M.B., (Brevet-Colonel) F.R.C.S.Eng., K.H.S.	Grenadier Guards	Millbank, London	—
Surg.-Lieutenant-Colonel	Crooke-Lawless, W. R., M.D.	Coldstream Guards	On Staff of Viceroy of India	—
„	Bateson, J. F., M.B.	„	Windsor	—
Surgeon-Major	Moore, S. G.	Scots Guards	Aldershot	b.
„	Whiston, P. H.	Irish Guards	Caterham	b.

QUARTERMASTERS.

Rank.	Name.	Dates of		Present Station.	Date of last arrival home or embarkation for Abroad.
		Birth.	Promotion to present rank.		
Hon. Major ..	Merritt, G. ..	23 6 1856	10 7 1889 Hon. Major 10 7 1904	Cape Town, S. Africa	24 12 1904
„ „ ..	Beach, J. H. W. ..	9 9 1857	8 1 1890 „ „ 8 1 1905	London ..	2 5 1903
„ „ ..	Hirst, J. ..	23 2 1856	4 2 1891 „ „ 4 2 1906	Portsmouth ..	31 8 1902
„ „ ..	Goater, B. ..	9 10 1854	23 12 1891 „ „ 23 12 1906	Chester ..	5 7 1903
„ „ ..	Lockhart, H. ..	6 8 1853	16 3 1892 „ „ 16 3 1907	Dublin ..	24 5 1903
„ Capt. ..	Lines, E. ..	16 5 1855	4 10 1893 Hon. Capt. 4 10 1903	Malta ..	9 7 1902
„ „ ..	Crawley, C. ...	7 5 1855	8 8 1894 „ „ 8 8 1904	Egypt ..	15 5 1903
„ „ ..	Brake, T. F. ..	18 2 1859	5 9 1894 „ „ 5 9 1904	Dublin ..	23 5 1902
„ „ ..	Short, J. B. ..	13 2 1860	12 9 1894 „ „ 29 11 1900	Maritzburg, S. Africa	21 10 1899
„ „ ..	Hasell, H. G. ..	23 8 1860	17 4 1895 „ „ 17 4 1905	Woolwich ..	14 12 1902
„ „ ..	Finley, A. ..	18 3 1853	6 5 1896 „ „ 6 5 1906	Aldershot ..	9 11 1902
Hon. Lieut. ...	Allen, G. L. ..	25 5 1856	9 6 1897	Malta ..	19 2 1903
„ Captain	Bruce, A. ..	4 8 1858	24 11 1897 „ „ 22 8 1902	Woolwich ..	13 2 1904
„ Lieut. ...	Macintosh, P. ...	12 10 1854	24 8 1898	Edinburgh ..	13 9 1902
„ „ ..	Hawkey, R. ..	12 9 1854	28 12 1898	Chatham ..	16 11 1902
„ „ ..	Whitehorn, J., C.B.	27 2 1856	8 3 1899	Cork ..	24 3 1903
„ „ ..	Painton, G. H. ..	5 7 1855	24 6 1899	Depôt ..	10 9 1902
„ „ ..	Brook, H. S. ..	19 7 1856	12 7 1899	S. Africa ..	22 9 1899
„ „ ..	Spackman, H. ...	11 6 1860	4 10 1899	S. Africa ..	17 11 1905
„ „ ..	Chalk, A. J. ..	1 3 1861	18 11 1899	Dover ..	23 11 1902
„ „ ..	Green, J. ..	23 12 1859	18 11 1899	Devonport ..	21 6 1902
„ „ ..	Talbot, W. J. C. ..	25 10 1857	18 11 1899	York ..	28 12 1902
„ „ ..	Moss, E. P. ..	11 4 1859	18 11 1899	Southampton	23 9 1905
„ „ ..	Essex, B. E. ..	2 6 1860	6 12 1899	Colchester ..	9 9 1902
„ „ ..	McClay, J. ..	20 9 1858	6 12 1899	Woolwich ..	31 1 1905
„ „ ..	Short, G. F. ..	5 4 1862	6 12 1899	N. China ..	8 7 1904
„ „ ..	Woolley, H. ..	28 1 1864	13 12 1899	Gibraltar ..	12 11 1902
„ „ ..	Glennon, J. ..	10 6 1859	13 12 1899	Belfast ..	4 10 1902
„ „ ..	Hall, F. W. ..	26 4 1859	3 1 1900	Aldershot ..	7 12 1902
„ „ ..	Morrison, A. ..	16 5 1860	3 1 1900	Bulford ..	8 2 1906
„ „ ..	Attwood, J. ..	16 12 1862	24 1 1900	Hilsea ..	13 12 1902
„ „ ..	Duncan, W. ..	22 4 1859	24 1 1900	Netley ..	18 9 1902
„ „ ..	Roberts, R. O. ...	12 9 1858	24 1 1900	Maritzburg, C. C., S. Africa	24 12 1904
„ „ ..	'Bruce, F. ..	29 1 1859	3 2 1900	Dublin ..	19 11 1900
„ „ ..	Holway, W. G. ..	8 11 1859	3 2 1900	Wynburg, S. Africa	22 9 1904
„ „ ..	Offord, E. P. ..	3 5 1862	3 2 1900	Gosport ..	9 9 1902
„ „ ..	Audus, H. J. F. ..	17 6 1860	3 2 1900	Alton ..	11 3 1900
„ „ ..	Conolly, J. B. ...	7 8 1864	7 3 1900	Netley ..	10 9 1902
„ „ ..	Houghton, E. ...	17 6 1859	17 3 1900	Belfast ..	7 12 1902
„ „ ..	Scott, R. ..	5 11 1859	17 3 1900	Malta ..	15 10 1902

¹ Specialist Certificate in Skiagraphy.

Rank.	Name.	Dates of		Present Station.	Date of last arrival home or embarkation for Abroad.
		Birth.	Promotion to present rank.		
Hon. Lieut. . .	Wilson, A. . .	15 9 1864	17 3 1900	Hong Kong . .	2 11 1904
" " . .	Glover, H. W. . .	10 2 1860	17 3 1900	Aldershot . .	6 5 1901
" " . .	Exton, T. . .	11 8 1860	23 5 1900	" . .	30 8 1902
" Captain	Crookes, F. . .	26 11 1861	23 5 1900	Devonport . .	10 12 1904
			Hon. Capt. 29 11 1900		
" Lieut. . .	Cowan, R. R. . .	29 5 1862	30 5 1900	Shorncliffe . .	19 12 1903
" " . .	Benson, G. A. . .	19 12 1862	2 6 1900	Curragh . .	16 4 1905
" " . .	Jacomb, T. J. . .	16 4 1861	2 6 1900	S. Africa . .	14 7 1906
" " . .	Wakefield, H. P. . .	11 2 1862	23 6 1900	Bulford . .	16 4 1905
" " . .	Wheeler, A. . .	1 4 1862	26 6 1900	Depôt . .	10 2 1905
" " . .	Pilgrim, A. J. . .	23 6 1860	15 8 1900	London . .	31 8 1902
" " . .	Lunney, A. . .	7 1 1864	16 2 1901	Portsmouth . .	10 2 1905
" " . .	Clapshaw, A. . .	3 9 1859	13 3 1901	York . .	2 10 1902
" " . .	Archibald, W. N. . .	8 9 1861	13 3 1901	Egypt . .	9 4 1903
" " . .	Watkins, J. . .	29 5 1860	13 3 1901	Chester . .	16 4 1905
" " . .	Gillman, J. . .	28 11 1862	11 1 1902	Netley . .	16 4 1905
" " . .	Cope, T. F. . .	14 11 1861	11 1 1902	Pretoria, S. Africa	11 1 1902

RETIRED MEDICAL OFFICERS OF THE REGULAR ARMY WHO ARE EMPLOYED.

Name.	Station where Employed.
Col. B. B. Conolly, C.B., M.D. . .	London.
Lieut.-Col. W. R. G. Hinds, M.D. (Hon. Brig. Surg.) . .	Naas.
Lieut.-Col. A. H. Stokes, M.B. . .	Sandown.
Lieut.-Col. W. O'B. White (Hon. Brig. Surg.) . .	Tralee.
Lieut.-Col. W. H. Steele, M.D. . .	Clifton, Bristol.
Lieut.-Col. W. C. Gasteen, M.B. . .	Seaforth.
Lieut.-Col. R. H. Robinson . .	Guernsey.
Lieut.-Col. J. D. Crowe (Hon. Brig. Surg.) . .	Weymouth.
Lieut.-Col. H. H. Stokes, M.D. . .	Oxford.
Lieut.-Col. J. Latchford, M.B. . .	Dublin.
Capt. H. Cotton . .	Ipswich.
Lieut.-Col. J. G. Williamson . .	Leicester.
Lieut.-Col. J. Coats, M.B. . .	Ayr.
Lieut.-Col. W. M. James . .	School of Musketry, Hythe.
Lieut.-Col. J. A. Gormley, M.D. . .	Kingston.
Col. A. L. Browne, M.D. . .	Taunton.
Lieut.-Col. H. Scott, M.B. . .	London.
Lieut.-Col. J. Hoysted . .	Derby.
Col. W. A. Parker . .	Penally.
Lieut.-Col. J. McGann . .	Detention Barracks, Dublin.
Major P. Connolly . .	Belfast.
Lieut.-Col. L. B. Ward . .	Coventry.
Lieut.-Col. P. B. Tuthill, M.D. . .	Chichester.
Lieut.-Col. W. Finlay . .	Jersey.
Lieut.-Col. H. Charlesworth, C.M.G. . .	London.
Lieut.-Col. G. F. Poynder . .	Bedford.
Major P. G. Ievers . .	Fort Staddon.
Lieut.-Col. J. Tidbury, M.D. . .	Royal Military College.
Lieut.-Col. L. Haywood, M.B. . .	Detention Barracks, Aldershot.
Major J. F. Burke . .	Lancaster.
Lieut.-Col. T. B. A. Tuckey . .	Detention Barracks, York.
Lieut.-Col. W. G. Clements . .	Christchurch.
Lieut.-Col. J. McLaughlin, M.D. . .	Bradford.
Lieut.-Col. A. Baird, M.B. . .	Worcester.
Lieut.-Col. J. Riordan, M.B. . .	Clonmel.
Lieut.-Col. J. T. Carey, M.B. . .	Manchester.
Major E. H. Myles, M.B. . .	Guernsey.

Name.	Station where Employed.
Surg.-Lieut.-Col. G. S. Robinson	Eastbourne.
Major S. Butterworth	Carlisle.
Lieut.-Col. G. T. Trewman	Reading.
Lieut.-Col. J. Osburne	Galway.
Lieut.-Col. E. M. Wilson, C.B., C.M.G., D.S.O... ..	Record Office, Aldershot.
Major A. E. C. Spence, M.B.	Warwick.
Major B. F. Zimmermann	Topsham, Exeter.
Major J. D. Moir, M.B.	Great Yarmouth.
Major R. J. McCormack, M.D.	Omagh.
Lieut.-Col. T. A. Dixon, M.D.	Maidstone.
Major R. I. Power	Waterford.
Lieut.-Col. T. Archer	Lydd.
Lieut.-Col. U. J. Bourke, M.B.	Hamilton.
Lieut.-Col. G. E. Moffet, M.B.	Perth.
Lieut.-Col. F. J. Greig	Stirling.
Lieut.-Col. J. Kearney, M.D.	Wrexham.
Major J. P. S. Hayes	Gravesend.
Major J. W. F. Long	Military Prison, Dover.
Lieut.-Col. T. H. Corkery	Exeter.
Lieut.-Col. W. R. Barnes	Dorchester.
Lieut.-Col. M. J. Whitty, M.D.	Liverpool.
Lieut.-Col. C. J. W. Tatham	Scarborough.
Lieut.-Col. J. R. Mallins, M.B.	Detention Barracks, Gosport.
Lieut.-Col. J. M. Nicolls, M.B.	Birr.
Lieut.-Col. A. de C. Scanlan	Detention Barracks, Woking.
Lieut.-Col. W. S. Dowman	Detention Barracks, Cork.
Major G. A. Wade	Horfield.
Capt. J. T. Clapham	Landguard Fort.
Major C. W. Allport	Great Yarmouth.

JOURNAL

OF THE

ROYAL ARMY MEDICAL CORPS.

Corps News.

JULY, 1907.

ARMY MEDICAL SERVICE.—GAZETTE NOTIFICATIONS.

Major David Stiell, M.D., retires on retired pay, dated May 25, 1907. He entered the Service February 5, 1887, and was promoted Major, February 5, 1899. His war services are as follows: South African War, 1900-1902—Operations in the Orange Free State, February to May, 1900. Operations in the Transvaal in May and June, 1900. Operations in the Transvaal, east and west of Pretoria, July to November 29, 1900, including action at Zilikats Nek. Operations in Cape Colony, north and south of Orange River, 1900. Operations in the Transvaal, November 30, 1900, to May 31, 1902. Queen's medal with three clasps. King's medal with two clasps.

Lieutenant-Colonel George E. Twiss retires on retired pay, dated June 8, 1907. He entered the Service February 5, 1881, was promoted Surgeon-Major, February 5, 1893, Lieutenant-Colonel February 5, 1901, and selected for increased pay of his rank May 25, 1904. His war services are as follows: South African War, 1899. Zulu Campaign. Served as Civil-Surgeon. Medal with clasp. Egyptian Expedition, 1882—Surrender of Kafr Dower. Medal and bronze star. Soudan Expedition, 1884-5—Nile. South African War, 1899-1902—Principal Medical Officer of a General Hospital. Operations in the Orange Free State, March to May, 1900. Operations in Orange River Colony, May to July, 1900. Operations in the Transvaal, July to November 29, 1900. Operations in Cape Colony, south of Orange River, November, 1899, to March, 1900. Operations in Transvaal, November 30, 1900, to May 31, 1902. Despatches, *London Gazette*, April 16, 1901, and July 29, 1902. Queen's medal with three clasps. King's medal with two clasps.

Lieutenant-Colonel John L. Hall retires on retired pay, dated June 8, 1907. He entered the Service March 6, 1880, was placed on temporary half-pay, from September 3, 1891, to January 2, 1892, promoted Surgeon-Major, July 6, 1892, and Lieutenant-Colonel, March 6, 1900. His war services are as follows: South African War, 1899-1901—Principal Medical Officer of a General Hospital. Operations in the Transvaal, 1901. Queen's medal with three clasps.

Lieutenant-Colonel James S. Green, M.B., is placed on temporary half-pay on account of ill-health, dated May 22, 1907.

ARRIVAL HOME.—Captain and Quartermaster J. B. Short, from South Africa.

ARRIVALS HOME ON LEAVE.—From India: Lieutenant-Colonels F. H. Treherne, H. Carr, J. R. Forrest; Major H. W. K. Read; Captains W. R. P. Goodwin, M. F. Foulds, A. J. Williamson, A. E. B. Wood, and Lieutenants M. J. Cromie and F. H. Noke. From Egypt: Lieutenant-Colonels G. D. Hunter, D.S.O., J. D. F. Donegan, and Captain C. V. B. Stanley. From Gibraltar: Major H. A. Berryman. From South Africa: Captain H. H. J. Fawcett. From Straits Settlements: Lieutenant G. A. D. Harvey.

EMBARKATION.—For Straits Settlements: Lieutenant C. J. Wyatt.

DIPLOMA.—Major B. Ford has attained the D.P.H. of the Royal College of Physicians and Surgeons, Ireland.

LIST OF CASUALTIES:—

Transfer to other Corps.—9862 Sergeant F. W. Raven to Colchester Companies as Instructor, Royal Army Medical Corps Militia.

Transfers from other Corps.—8439 Sergeant E. B. Snowden from Auxiliary Forces; 1108 Private J. A. C. Nicholson from Royal Garrison Artillery.

Transfers to Army Reserve.—17650 Corporal A. J. C. Hendric, 16134 Lance-Corporal W. J. Bransgrove, 16263 Private G. S. Rand, 112 Private B. Hamilton, 14170 Private W. Adams, 19559 Private E. V. Steers, 19465 Private T. Davidson, 14213 Private W. H. Downes, 19053 Private W. G. Stokes, 19059 Private W. Bews, 14922 Private A. McDowell, 19062 Private A. J. Harbroe, 15735 Private J. Lynch, 16079 Private S. Hart, 99 Private G. V. Rose, 18492 Private C. G. London, 18925 Private H. Haigh, 12479 Private C. J. Laven, 13712 Private J. H. Ball, 19058 Private H. Wellcome, 19065 Private E. G. Roberts, 19072 Private F. Collins.

Discharges.—5643 Sergeant-Major T. W. Jent, having reached the age; 7415 Sergeant W. Bennett, termination of second period; 10157 Sergeant W. Johnston, claimed after three months' notice; 7425 Lance-Sergeant T. S. Chowne, termination of second period; 9928 Corporal E. B. Buttell, medically unfit; 14224 Corporal G. H. Johnson (A.O. 106), having reached the age; 7741 Private H. P. Weake, medically unfit; 436 Private L. Moorhouse, medically unfit; 18919 Private M. Garnham, medically unfit; 10126 Private J. Healey, free after thirteen years; 7423 Private H. Kerr, termination of second period.

Deaths.—11107 Sergeant P. G. Hambrose, at Shorncliffe, May 30, 1907; 19809 Private W. R. Forder, at Dublin, May 31, 1907; 18421 Private J. Goodwin, at Pretoria, May 3, 1907; 19105 Private W. Parkins, at Pretoria, May 15, 1907.

Arrivals Home from Abroad.—From South Africa, per s.s. "Guelph," May 21, 1907: 8003 Sergeant-Major G. H. Roberts. From Malta, per s.s. "Menes," June 4, 1907: 8286 Sergeant-Major R. H. Green. From Singapore, per s.s. "Calchas," May 23, 1907: 851 Private J. E. Lewis.

Departure for Abroad.—To Jamaica, per s.s. "Port Antonio," May 31, 1907: 10548 Staff-Sergeant J. H. Smith.

CERTIFICATES OF EDUCATION.—ABROAD.

The following non-commissioned officers and men have been awarded 1st Class Certificates of Education. Examination, March, 1907.—11123 Staff-Sergeant H. J. Polhill, 8086 Staff-Sergeant W. Gough, 9315 Staff-Sergeant A. Holden, 16177 Sergeant A. F. Robinson, 11214 Sergeant W. E. Squires (with Egyptian Army), 9703 Sergeant W. B. Heponstall, 17706 Corporal D. Phillips, 11834 Private G. W. Hillier, 18657 Private V. Tripp.

The following passed in *Group I.*—15980 Corporal A. G. Anderton, 18777 Private W. Aylett.

The following passed in *Group II.*—18713 Sergeant W. H. Ellis, 18403 Corporal H. E. Mayell.

THE FOLLOWING NON-COMMISSIONED OFFICERS AND MEN HAVE PASSED IN THE VARIOUS CORPS EXAMINATIONS FOR PROMOTION, &c.

For Quartermaster-Sergeant.—8166 Staff-Sergeant W. Gough, 9697 Staff-Sergeant C. W. France, 9053 Staff-Sergeant F. J. Filmer.

For Staff-Sergeant.—8842 Staff-Sergeant W. H. Akehurst, 13207 Sergeant J. B. Cantrell, 11082 Sergeant J. Fraser, 11952 Sergeant A. E. Malley.

For Sergeant.—11211 Lance-Sergeant L. T. Marsden, 10511 Lance-Sergeant F. Morgan, 16399 Lance-Sergeant R. D. Elliott, 15544 Corporal E. J. Barnes, 18391 Corporal E. C. Turner, 18432 Corporal G. F. Pearce, 14082 Corporal G. Prince.

For Corporal.—17511 Private D. Carter, 18259 Private W. T. Rodin, 17742 Private A. T. Platt, 17464 Private N. J. Emery, 18090 Private A. C. Wilson, 18690 Private A. E. Parkins, 19086 Private A. Wain, 13212 Private G. Brown, 18291 Private G. Johnston, 19478 Private A. Pollitt, 14336 Private J. McIlveen, 19200 Private J. Ballantine, 45 Private T. J. Moffatt.

NOTES FROM BELFAST.—Captain G. J. S. Archer, R.A.M.C., writes (May 21, 1907): "Major G. W. Tate and Captain R. N. Hunt have been posted to Finner Camp, Major C. A. Young to Ballykinlar, Captain J. G. Foster to Magilligan Camp, Captain E. P. Connolly to Dunree Camp, Captain J. W. West to Ballyliffen, Captain R. C. Wilson to Dundalk, and Lieutenant F. A. McCammon to Mosney Camp. Captain G. J. Stoney Archer has taken over the duties of Company Officer in addition to the duties of Surgical Specialist.

"No. 17358 Private C. Ennor has been transferred to Fermoy as Compounder of Medicines.

"The Cricket Club of No. 15 Company Royal Army Medical Corps has every prospect of a good season this summer, as we are fortunate in having some fairly good players at headquarters this year. Our first match was played against Holywood on Whit-Monday. A start was made at 12 noon, and on drawing stumps we only required 23 runs to win, with all our wickets intact. The following is the score: 1st innings—Holywood, 65; Belfast, 96. 2nd innings—Holywood, 90; Belfast, 37 for no wicket. An excellent cold luncheon was provided by Staff-Sergeant Patch for both teams, and the day's outing was thoroughly enjoyed."

NOTES FROM DEVONPORT.—The following report is from the *Western Daily Mercury* of June 1: "A provincial sessional meeting of the Royal Sanitary Institute was held last night at the Western Law Courts, Guildhall, Plymouth, when the subject for discussion was 'Infantile Mortality,' which was opened by Major R. J. Blackham, D.P.H., R.A.M.C. (member of the Hon. Society of the Inner Temple). Colonel J. Lane Notter, M.A., M.D., R.A.M.C. (Chairman of the Council of the Institute), presided, and amongst others present were Dr. W. P. Swain (Chairman of the Sanitary Committee, Plymouth), Dr. C. A. Hingston, Dr. Hammond (Liskeard), Dr. J. P. D. Ward, Dr. F. M. Williams, D.P.H., Medical Officer of Health, Plymouth, Dr. S. Noy Scott, D.P.H., Medical Officer of Health, Plympton St. Mary R.D.C., Dr. Rosa Bale, Dr. H. Webber, Dr. W. H. Brenton, Dr. H. B. Palmer, Dr. S. G. Vinter, Dr. C. J. Cooke, Dr. A. B. Soltau, Dr. W. Cheyne Wilson, Miss Maud Mark (Lady Sanitary Inspector, Plymouth), Colonel Bourke, C.B., R.A.M.C., Colonel Caldwell, and Messrs. A. H. Holman, G. Randle, S. J. Page, A. E. Wood, T. Willies, J. J. Judge, H. Victor Prigg, J. Proudfoot, J. Thorning, W. Britton-Jones, George Sims, and J. Addiscott.

"The Chairman thought the subject of the discussion that night was one that appealed very strongly to everyone, as it affected the well-being of the community.

"Major R. J. Blackham said the large preventable wastage which occurred during the first year of human life was, perhaps, the most important medical and social problem of the age. He understood that no public meeting or discussion on infant mortality had as yet been held in the Three Towns. He thought it would be interesting to show that the important division of State medicine, known as infant hygiene, which claimed so much of their attention as civilian sanitary experts, had, in view of the large number of women and children borne on the strength of the Army, a world-wide importance for officers of the Royal Army Medical Corps, and, in consequence, much interest for military sanitarians.

"*Some of the Causes.*—Infant mortality in the early weeks of life, said Dr. Newman, Medical Officer of Health for Finsbury, was evidently due in a large measure to the physical condition of the mother, leading to prematurity and debility of the infant; and in the latter months of the first year infant mortality appeared to be due to unsatisfactory feeding of the infant. From either point of view it became clear that infant mortality was not one of sanitation alone, or housing, or, indeed, of poverty, as such, but was mainly a question of motherhood.

"Dealing with measures which affected the mother, Major Blackham said he should place foremost the education of elder girls in the care of infants and young children. By the time a girl became a mother she had sometimes 'ideas,' often erroneous ones, on baby rearing, and it was frequently too late to inculcate sound notions on infant hygiene when the responsibilities of maternity had actually arrived. He thought the first effort to obtain good motherhood was to secure that all elder girls should be taught the elements of infant hygiene as a separate portion of the school curriculum. There was no reason why courses of instruction in the feeding and tending of young children should not be given in all elementary schools by specially trained and certificated nurses. That had been done under the Manchester Education Authority for some years.

"The second measure affecting the mother was provision for the proper care of poor women during and immediately after the puerperium. No charitable or other organi-

sation existed in the Three Towns for the purpose of caring for poor women during childbirth, and the result must be that many valuable lives were lost for want of skilled advice during that critical period. The military authorities were ahead of even the wealthy and ancient borough of Plymouth in this particular, as they had established, as far back as 1865, the only maternity institution in the West of England with the exception of the hospitals at Bristol. He considered it was a matter of which the Army might well be proud, that the death-rate of its children, even in India, where the climatic conditions were so inimical to the earlier years of life, was only about one-third of that of the borough of Plymouth. Restaurants were established in Paris where women while nursing were fed gratis twice daily. No question was asked as to birth, religion, or legitimacy: the woman was hungry and had an infant to feed—that was sufficient for the French philanthropist. Surely that was an example which might be followed in charitable England.

“*Protection of the Infant.*—For the protection of the infant he considered there must be a provision of pure milk for artificial feeding; appointment of lady health visitors; and the provision for the earlier registration of births. The provision of a pure milk supply must take a very important place in all schemes for the prevention of infant mortality. Nothing, of course, was equal to good maternal nursing; but no method of feeding gave much worse results than poor maternal feeding. He strongly advocated the appointment of lady health visitors. Plymouth had realised the importance of this, but Devonport and Stonehouse still lagged behind.

“Concluding, Major Blackham said new legislation required from Parliament was for the governing of the sale of infants’ foods, the use of feeding bottles and ‘dummies,’ and undigested farinaceous foods; also to provide for the further protection of infants sent out to nurse.

“Mr. Paul Swain, Chairman of Sanitary Committee, Colonel Caldwell, Drs. Noy Scott, Hingston, Bale, Webber, Soltau, F. M. Williams, H. B. Palmer, Miss Mark, Dr. Ward, Mr. S. J. Page, C.C., and Mr. A. E. Wood, C.C., took part in the discussion, and the proceedings closed with votes of thanks to Major Blackham and the Chairman.”

NOTES FROM MANCHESTER.—The Adjutant, Manchester Companies Royal Army Medical Corps (Volunteers) writes (June 4, 1907): “The annual training of this Corps took place during Whit-week at Salisbury Plain. This is the third year in succession that the Corps has accompanied the Manchester Volunteer Infantry Brigade to the Plain, and although there is not very much in the way of attractions in the neighbourhood, still there was no deterioration in the numbers attending camp. Windmill Hill Camp, where all the Manchester battalions were encamped, is one of the favourite camping grounds, and we were very fortunate in getting our old site, as it lessened considerably the duties of the advance party in pitching the camp and making all preliminary arrangements. It was regretted by all ranks that Colonel Coates, C.B., V.D., the popular Commanding Officer, was, at the last moment, prevented, owing to urgent professional duty, from attending camp. This is the first time in twenty-three that Colonel Coates has been absent from training, and in Corps Orders published before leaving Manchester he expressed extreme regret at his unavoidable absence, and wished everyone an enjoyable and profitable week. Major Fairclough, the second in command, was also absent through illness, so that the command of the Corps devolved on Major J. Bentley Mann, and a more capable officer could not have been chosen. A general favourite with everyone, it was soon evident that in Major Mann the Corps possessed an excellent temporary Commanding Officer, and the same support was accorded him as has always been given by this Corps to its Commanding Officer. The training was carried out on the lines adopted previously, but as this year only one week was allowed instead of two, more work had to be got into each day’s programme. Still, all entered into it with a desire to do as much work as possible, and although the weather was not all that could be desired, it was evident that at the end of the week much profitable work had been gone through. Much, of course, had to be left undone, especially the very important part of the work connected with Hospital and Field Ambulance Equipment, but it is hoped that in the future the training will revert to the original two weeks, when more time will be available for instruction in this necessary part of the training. The event of the week was the surprise visit of Field-Marshal Earl Roberts to the Manchester Camp on Monday morning. Just as the Corps had formed up on parade to march off for the day’s work, the Field-Marshal, accompanied by Lieutenant-General Sir Ian Hamilton and staff, rode up and was received by Major Mann. He enquired about the strength of the Corps and the training of the men,

&c., complimented Major Mann on their fine appearance, and expressed himself well pleased with all he had seen. On Thursday the Annual Inspection took place. Colonel Allan May, R.A.M.C., A.M.O., Salisbury, inspected the Corps for the third time. After the march past the men went through all the various Corps drills and duties, including the pitching of a field ambulance encampment and dressing-station practice. At the conclusion of the inspection Colonel May, in a short speech, made special reference to the excellence of the first aid work, and singled out for commendation certain non-commissioned officers. He complimented Major Mann on the thorough training of his men, and concluded by expressing regret that it would be the last time he should inspect the Corps, as in a few months he was retiring from the Service. Friday was the day set apart for the only field day, and every available man marched out to take part in the battle of Silk Hill. The Royal Army Medical Corps on occasions like this do not see much of the actual fighting, with the exception of the few who are told off for duty at the fighting line; however, much useful work can be and is done on these field days. Lieutenant-General Sir Ian Hamilton rode up to the dressing-station just as the troops were returning home, and regretted his inability to be present and see the men at work; he enquired after the number of patients treated, and when informed that they were few said 'he was sorry for our sake.' During the week the social side of the training was not neglected. A concert was held in the Sergeant's mess on Tuesday evening, another in the men's canteen on Wednesday, and on Thursday the annual sports took place. The Corps returned to Manchester on Saturday afternoon, and it was the general opinion of all that this year's camp was an undoubted success. The following officers were present in Camp: Major J. Bentley Mann (in Command); Captains W. B. Pritchard, F. D. Woolley, W. R. Matthews, H. G. Parker, W. R. N. Smithard, G. Ashton, C. Roberts, W. F. Dickinson; Lieutenants A. F. Thompson, G. W. FitzGerald, G. R. Wattleworth, C. G. Stoddard, S. Pritchard, H. Thomson; Rev. T. G. Kent, M.A. (Acting Chaplain)."

NOTES FROM BLOEMFONTEIN.—Major S. F. Clark, R.A.M.C., writes (May 9, 1907): "All ranks who have served in this station will be interested to hear that No. 8 General Hospital of the war was at last evacuated to-day, and the new hospital at Tempe Ridge was taken into use. The new buildings are by no means complete, but everybody is glad to have escaped from their former surroundings, which seemed to be the goal of every dust-storm in the colony. The exodus took place very quietly and unostentatiously, watched, perhaps, by the shadows of the many gallant men who died in the tents and huts of historic No. 8.

"Major Hinde has gone on leave pending retirement. He is settling down in the Transvaal, where we wish him every success."

NOTES FROM CANADA.—Mr. J. K. McGill, late of the Corps, writes from Renfrew P.O., Ontario (May 5, 1907), enclosing a short account of the life, &c., in Canada. He states: "Of employment, there is every opportunity of getting plenty of situations of all sorts, both skilled and unskilled, the demand being greater than the supply both in summer and winter. Farm hands are in great demand, and the wages run from 16 dollars to 30 dollars per month with board and lodging. Carpenters get 40 cents per hour, bricklayers 40 to 60 cents per hour, and bricklayers' labourers 1 dollar 75 cents per day. Men cooks from 50 to 75 dollars per month and board, clerks 30 dollars per month and more, according to their abilities. Musicians are in great demand in the towns, with pay at 20 dollars per month for conducting the band, and a situation found for them at not less than 1 dollar 25 cents per day. The country is a fine one and very healthy, not too hot in summer, but cold in winter, and there is plenty of sport, such as hunting deer, bear, &c., and fishing of all kinds for those inclined. Those who contemplate settling abroad could not go to a better country than Canada, where they will be sure of plenty of work and good wages. In conclusion, if any of my old comrades think of settling here and require information, I would be pleased to send it to them on receipt of letter."

NOTES FROM SIERRA LEONE.—Captain F. Harvey, R.A.M.C., writes (May 5, 1907): "The following changes have taken place here since our last letter:—

"Arrivals.—Major J. Girvin, Captains H. N. Ross, A. W. Sampey, and W. J. S. Harvey.

"Departures.—Major G. T. Rawnsley, Captains J. McD. McCarthy and J. Cowan.

"Present Stations.—*Tower Hill*—Major Girvin, S.M.O., with Captains Skinner and W. J. S. Harvey doing duty, and Captain F. Harvey as Specialist Sanitary Officer.

Mount Aureol Hospital—Captain Ross in charge, and Captain Sampey doing duty. *Wilberforce Hospital*—Captain FitzGerald in charge. In the *Protectorate, Port Lokkoh*—Captain Fawcett. *Mabanta*—Captain McGrigor. Batkanu has now been evacuated as a Bush Station. Captain D. S. Skelton is on sixty-one days' leave to the Islands.

"The following non-commissioned officers have arrived and departed: Sergeant H. Ogden as laboratory assistant in relief of Sergeant W. A. Muirhead; Sergeant W. E. Saunders in relief of Sergeant J. R. Simmons at Tower Hill Hospital.

"On April 18 the Royal Army Medical Corps gave their Annual Gymkhana, the programme of which is given below. This is usually considered the most popular function of the year, and everybody was there. This year it was a greater success than last, if possible. Mrs. Girvin was hostess and Mrs. Haddon-Smith, wife of His Excellency the Acting Governor, very kindly gave away the prizes. The most exciting event was the hammock race, about 200 yards, which was won, after a desperate finish, by H.E. the Acting Governor's team, Lieutenant Hicks, A.D.C., riding. By kind permission of Lieutenant-Colonel Blackdon and officers, the band of the 1st West India Regiment discoursed sweet music, while tea, ices, and other refreshments were served.

"An order has recently been issued allowing officers to obtain sixty-one days' leave to England instead of to the Islands as heretofore, and if entitled to draw double pay under Article 455, Royal Warrant, will continue to do so whilst on sixty-one days' leave. This is a great advantage, and no doubt many officers will avail themselves of it when they can be spared, although up to the present the bare margin of strength has scarcely permitted this privilege being taken full advantage of, and is a measure which is considered as highly conducive to economy and efficiency by all tropical climatologists when on the subject of the West Coast of Africa. It just gives five weeks at home. The time spent on leave does not count towards the tour, which may be made up of two periods of not less than six months each, in accordance with Para. 503, King's Regulations. A reduction in the fares is to be hoped for by Messrs. Elder, Dempster and Company, who at present hold the monopoly and make no reduction on return tickets (£42 10s.), which is very high for a ten days' voyage.

"We now have an ice company and cold storage, which means better quality of food, a great desideratum in an enervating climate like this.

"The following figures show the number of admissions for malarial fever of European troops, ratio per 1,000, for the years 1897-1906:—

Year.	Admissions.	Year.	Admissions.
1897 ..	1,820	1902 ..	1,690
1898 ..	2,030	1903 ..	1,310
1899 ..	1,650	1904 ..	850
1900 ..	1,420	1905 ..	580
1901 ..	1,420	1906 ..	490

"These figures are interesting as showing the effects of surface drainage, bush clearance on War Department lands, general anti-malarial sanitation, quinine, nets, &c., started in 1903. But it must not be imagined that this place is one whit healthier than it was ten years ago. It must be remembered that we are surrounded here by a population of about sixty to seventy thousand coloured inhabitants, which include Creoles, Natives, Arabs, Syrians, Indians, &c., and any attempt at organised sanitation, as we understand it, does not exist. Twelve months' service out here has a peculiarly enervating effect on the constitution of any European, apart from actual illness. It is hoped that these figures will still be reduced, as there are yet many weak points to be got at. A surprise visit to Tower Hill Barracks at 11.30 p.m. one night, revealed the fact that amongst one particular unit occupying two barrack-rooms, only two men had their nets down, and the men of the W.I.B., R.G.A., who are West Indian Creoles, also quartered at Tower Hill, have not yet been issued with nets. However, it is very hard to find mosquitoes here at present, and has been so all through the dry season. Some men, though, manage to defeat all legislation for their health by absenting themselves all night in the town, which simply swarms with mosquitoes at all times of the year. The West India Regiment have only just been issued with nets, and their curve shows no very appreciable drop, but they have a large proportion of men on the lodging list, and others who have wives in the town and can obtain Saturday to Monday passes. Many of them, also, come already infected from the West Indies.

"Amongst the recent events here was the rifle meeting of the West African Regiment, the officers, Royal Army Medical Corps, entering a revolver team.

"The cricket season, which is just over, was largely engineered by Captain Skelton, who is considered the best all-round cricketer in Sierra Leone. Captain Ross likewise keeps up the reputation of the Corps at tennis.

"PROGRAMME OF EVENTS.

"(1) *Potato-Sticking from Hammocks*.—Points to be given for pace—pairs of lady and gentleman. Two prizes; also prizes to the hammock boys of the winning teams.

"(2) *Costume Race*.—The lady to provide a comic costume for her partner, who runs 50 yards in same. Two prizes; the most comic costume will win the lady's prize.

"(3) *Menagerie Race*.—Open to ladies and gentlemen. A prize to the first lady and first gentleman. Competitors to bring their own animals.

"(4) *Blackboard Animal Drawing Competition*.—Pairs of lady and gentleman. Two prizes.

"(5) *Blindfold Driving Obstacle Race*.—Pairs of lady and gentleman. Two prizes.

"(6) *Hammock Race*.—For gentlemen. One prize, and prizes to hammock boys of the winning team.

"(7) *Band Race*.—Three prizes."

NOTES FROM SIMLA.—Lieutenant-Colonel H. B. Mathias, D.S.O., R.A.M.C., Officiating Secretary to the Principal Medical Officer, His Majesty's Forces in India, writes (May 16, 1907):—

"*Appointments*.—Major T. W. Gibbard has been ordered to proceed to Simla for special duty at Army Headquarters; Major L. P. More has been appointed to officiate as Personal Assistant to the Principal Medical Officer, Northern Command, *vice* Captain W. R. P. Goodwin on leave (medical certificate); Lieutenant-Colonel W. C. Beevor, C.M.G., appointed to the officiating command of Station Hospital, Sialkot, on transfer from Western to Northern Command.

"*Leave*.—Captain W. R. P. Goodwin, six months out of India on medical certificate, from April 19, 1907; Lieutenant-Colonel T. G. Lavie, six months out of India on private affairs, from May 22, 1907; Lieutenant-Colonel H. Carr, six months out of India on medical certificate, from April 21, 1907."

NOTES FROM WYNBERG.—Sergeant-Major C. W. Kinsella, R.A.M.C., writes: "Major J. G. McNaught has assumed the duties of Company Officer, *vice* Major O'Reilly, on six months' leave to England.

"Captain and Quartermaster J. B. Short, whose embarkation has been delayed through illness in his family, sails about the middle of May. Captain Short has, during the past cricket season, wielded the willow much to our advantage, and he will no doubt be eagerly sought for at his new station. If an officers' Corps team be formed it will probably include one whose last South African record was '103—not out.'

"Quartermaster-Sergeant Roberts, having been promoted to warrant rank, proceeded home on April 29. Mr. Roberts has, during his stay, identified himself largely with our sporting interests, and expended much time and energy on behalf of our recreation club. The members of same presented Mr. Roberts with a gold ring, suitably inscribed, and the company wish him success in his new station.

"We have entered a team for the Second League of the Western Province Football Association, though the loss of such sterling players as Corporals Gregson and Kildea and Private Atherton leaves us much weaker than last year.

"Miss Miriam Merritt, daughter of Major and Quartermaster G. Merritt, has latterly been much in evidence at the City Hall, Cape Town, Municipal Concerts, and was specially engaged for the St. George's Day Commemoration Concert, where her rendering of the 'Lost Chord' and other items gained overwhelming applause.

"Corporals Fandam, Walsh and Leggett, Privates Parkinson, Garbett-Burbidge and Cousens, are candidates for the May examination in Part A, Compounders of Medicine. Corporal Whichelow has been permitted to take his discharge in South Africa."

QUEEN ALEXANDRA'S IMPERIAL MILITARY NURSING SERVICE.

The following ladies have received appointments as Staff Nurses; Miss E. L. Jackson, Miss M. McBride, Miss A. L. Stuart, Miss E. A. R. Yockney, Miss M. A. G. Martin, Miss R. L. Neville.

Postings and Transfers.—Sisters: Miss I. G. Willetts, to Military Hospital, Portsmouth, from the Queen Alexandra Military Hospital, Millbank, London; Miss L. E. MacKay, to Military Hospital, Khartoum, from Military Hospital, Alexandria, Egypt;

Miss D. M. Taylor, to Military Hospital, Khartoum, from Military Hospital, Cairo, Egypt; Miss G. M. Smith, to Military Hospital, Alexandria, Egypt, from Military Hospital, Khartoum; Miss A. Guthrie, to Military Hospital, Standerton, South Africa, from Military Hospital, Bloemfontein; Miss F. N. Roberts, to Royal Infirmary, Dublin, from Military Hospital, York. Staff Nurses: Miss F. A. Loseby, to Military Hospital, Harrismith, South Africa, from Military Hospital, Bloemfontein; Miss A. Ayre, to Military Hospital, Curragh, from Cambridge Hospital, Aldershot; Miss B. Rankin, to Military Hospital, Curragh, from Military Hospital, Colchester; Miss J. Connell, to Royal Victoria Hospital, Netley, on appointment; Miss K. E. Hearn, to Military Hospital, Colchester, on appointment; Miss E. K. Parker, to Cambridge Hospital, Aldershot, on appointment; Miss F. A. Harris, to Royal Infirmary, Dublin, on appointment.

Appointments Confirmed.—Staff Nurse: Miss S. G. M. Rogers.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Lieutenant Alexander Mackenzie to be Surgeon-Captain, dated September 21, 1906.

Surgeon-Major Charles A. MacMunn, M.D., to be Surgeon-Lieutenant-Colonel, dated May 28, 1907.

Surgeon-Major Charles Graham Grant to be Surgeon-Lieutenant-Colonel, dated May 28, 1907.

Surgeon-Major James Drummond, M.D., having been appointed to the command of 3rd Durham Royal Garrison Artillery (Volunteers), ceases to belong to the Army Medical Reserve of Officers.

ARMY MEDICAL RESERVE.

The undermentioned Gentlemen to be Lieutenants on probation, dated May 1, 1907: Charles Vere Nicoll, John Findon Murphy, Samuel Kilpatrick Adams, M.B., Murray Ross Taylor, M.B.

ROYAL ARMY MEDICAL CORPS (MILITIA).

Captain (Honorary Captain in the Army) H. E. Mortis to be Major, dated April 24, 1907.

Captain (Honorary Lieutenant in the Army) H. Fox, M.B., resigns his Commission, dated April 9, 1907.

CHANNEL ISLANDS MILITIA.

The Royal Militia of the Island of Jersey: Medical Company.—Henry John Shone, Gent., to be Surgeon-Lieutenant, dated May 25, 1907.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Scottish Command: Glasgow Companies.—Lieutenant W. A. Burns to be Captain, dated May 1, 1907.

Eastern Command: Woolwich Companies.—The announcement of the resignation of his Commission by Quartermaster J. P. Ekins, which appeared in the *London Gazette* of May 3, 1907, is cancelled.

Cadet Corps (St. Michael's, Woolwich) attached to the Eastern Command, Woolwich Companies.—The announcement of the resignation of his Commission by Captain J. P. Ekins, which appeared in the *London Gazette* of May 3, 1907, is cancelled.

Scottish Command: Aberdeen Companies.—Lewis Davis Cruickshank, M.B., to be Lieutenant, dated May 7, 1907.

Eastern Command: Woolwich Companies.—Lieutenant-Colonel and Honorary Colonel F. L. Stephenson, M.B., on completion of his period of service in command, is retired, with permission to retain his rank and to wear the prescribed uniform, dated April 16, 1907.

Major and Honorary Lieutenant-Colonel C. H. Hartt to be Lieutenant-Colonel, and to command under the conditions of Para. 47, Volunteer Regulations, dated April 16, 1907.

OTHER VOLUNTEER CORPS.

1st Banff, Royal Garrison Artillery (Volunteers).—William Manson Ferguson, Gent., to be Surgeon-Lieutenant, dated April 15, 1907.

1st East Riding of Yorkshire, Royal Garrison Artillery (Volunteers).—William Edwyn Falkenbridge Tinley, M.D., to be Surgeon-Lieutenant, dated April 1, 1907.

4th Volunteer Battalion, The Queen's Own (Royal West Kent Regiment).—Surgeon-Lieutenant F. B. Jefferies to be Surgeon-Captain, dated January 11, 1907.

6th Volunteer Battalion, The Royal Scots (Lothian Regiment).—Arthur Julian de Spiganovicz, M.B., to be Surgeon-Lieutenant, dated March 1, 1907.

3rd Volunteer Battalion, The South Wales Borderers.—Surgeon-Lieutenant D. J. Thomas resigns his Commission, dated April 26, 1907.

2nd Volunteer Battalion, The East Lancashire Regiment.—Surgeon-Major W. Deans is granted the honorary rank of Surgeon-Lieutenant Colonel, dated February 28, 1907. Surgeon-Major and Honorary Surgeon-Lieutenant-Colonel W. Deans resigns his Commission, with permission to retain his rank and to wear the prescribed uniform, dated March 1, 1907.

1st Cadet Battalion, The King's Royal Rifle Corps.—Acting Surgeon J. H. Reynolds, V.C., M.B. (Lieutenant-Colonel, retired pay), resigns his appointment, dated April 22, 1907.

1st Dumbartonshire Volunteer Rifle Corps.—Surgeon-Lieutenant F. Gracie, M.B., to be Surgeon-Captain, dated April 22, 1907.

1st Surrey (South London Volunteer Rifle Corps).—Surgeon-Lieutenant D. O. Kerr, M.B., to be Surgeon-Captain, dated May 1, 1907.

5th (Isle of Wight, "Princess Beatrice's") Volunteer Battalion, The Hampshire Regiment.—Surgeon-Lieutenant W. H. Harland to be Surgeon-Captain, dated May 15, 1907.

4th Volunteer Battalion, The Queen's Own (Royal West Kent Regiment).—Super-numerary Surgeon-Lieutenant W. J. Woodman to be Surgeon-Captain, remaining supernumerary, dated May 2, 1907.

1st Volunteer Battalion, The King's (Shropshire Light Infantry).—Surgeon-Lieutenant-Colonel W. H. Packer, M.D., is granted the honorary rank of Surgeon-Colonel, dated April 20, 1907.

1st Herefordshire Volunteer Rifle Corps.—Surgeon-Lieutenant J. N. Macmullan to be Surgeon-Captain, dated November 1, 1906.

1st Volunteer Battalion, The Gordon Highlanders.—Frederick Keiller Smith, Gent., to be Surgeon-Lieutenant, dated May 1, 1907.

1st Volunteer Battalion, The Leicestershire Regiment.—Surgeon-Lieutenant W. F. McAllister-Hewlings resigns his Commission, dated March 9, 1907.

VOLUNTEER OFFICERS' DECORATION.

The King has been graciously pleased to confer the Volunteer Officers' Decoration upon the undermentioned officers of the Volunteer Force, who have been duly recommended for the same under the terms of the Royal Warrant, dated July 25, 1892 :—

5th Volunteer Battalion, The Durham Light Infantry.—Surgeon-Major Andrew Arthur Abraham.

1st Fifehire Royal Garrison Artillery (Volunteers).—Surgeon-Major Robert Balfour Graham.

5th Volunteer Battalion, The Royal Scots (Lothian Regiment).—Surgeon-Lieutenant-Colonel James Mill, M.B.

MEMORANDUM.

It is notified for general information that the undermentioned Officers will be required to proceed to the commands specified during the coming trooping season.

Definite orders will be issued through the usual channels, and probable dates of embarkation, with the specific commands in India, will be notified as soon as possible.

Officers of the same rank ordered to different foreign stations may, by mutual arrangement, have their stations altered, but it must be clearly understood that, while the Director-General is anxious to meet Officers' wishes, it is not always possible to give effect to them. Applications for alteration of station or for exchanges of position on the roster for service abroad should be submitted as early as possible; they cannot be considered if received after the formal orders have been issued for Officers to be held in readiness for service abroad, owing to the serious inconvenience caused.

Family forms should be completed and returned without delay.

Command	Rank and Name	Command	Rank and Name
India ..	Lieut.-Col. H. J. R. Moberly	India ..	Lieut. C. R. M. Morris
" ..	" S. F. Lougheed,	" ..	" R. E. U. Newman
" ..	" C.M.G.	" ..	" E. M. W. Paine
" ..	" H. E. R. James	" ..	" F. D. G. Howell
" ..	" F. S. Heuston,	" ..	" P. Sampson
" ..	" C.M.G.	" ..	" E. M. O'Neill
" ..	" R. H. Hall	" ..	" G. B. Edwards
" ..	" H. H. Brown	" ..	" J. W. L. Scott
" ..	" Sir J. Fayrer, Bt.	" ..	" W. C. Smales
" ..	" G. H. Barefoot	" ..	" A. H. Bond
" ..	Major A. W. Bewley	" ..	" T. T. H. Robinson
" ..	" W. A. S. J. Graham	" ..	" D. DeC. O'Grady
" ..	" A. Pearse	" ..	" L. G. Gibson
" ..	" E. B. Steel	" ..	" P. S. Stewart
" ..	Captain R. W. Clements	" ..	" T. W. O. Sexton
" ..	" G. B. Crisp	" ..	" E. J. Kavanagh
" ..	" W. B. Winkfield	Gibraltar..	Major C. E. P. Fowler
" ..	" G. J. A. Ormsby	" ..	" A. E. C. Keble
" ..	" H. M. Nicholls	" ..	Lieut. W. J. Weston
" ..	" H. H. Norman	" ..	" C. M. Drew
" ..	Lieut. P. C. T. Davy	Malta ..	" J. B. G. Mulligan
" ..	" C. G. Browne	Bermuda..	Lieut.-Col. J. C. Culling
" ..	" R. S. Smyth	Straits Set-	Lieut. A. A. Sutcliffe
" ..	" H. Stewart	tlements	
" ..	" R. G. Archibald	Jamaica ..	Lieut. R. C. Galgey
" ..	" F. A. McCammon	S. Africa ..	Lieut.-Col. J. Maher
" ..	" G. de la Cour	" ..	Major S. H. Fairrie
" ..	" W. Egan	" ..	Lieut. A. S. Littlejohns
" ..	" R. G. H. Tate	Mauritius ..	Major C. A. Young
" ..	" A. Dawson	" ..	" J. H. Campbell
" ..	" F. Forrest	N. China..	Captain C. W. Holden
" ..	" A. S. Williams	S. China ..	Major S. Macdonald
" ..	" V. C. Honeybourne	Egypt ..	Captain S. DeC. O'Grady
" ..	" C. T. Edmunds	Ceylon ..	Lieut. A. G. Cummins
" ..	" V. G. Johnson	Crete ..	" W. H. Gillatt

The following Quartermasters are detailed for service abroad as under. With reference to paragraph 3, the remarks regarding rank are inapplicable.

Command	Rank and Name	Command	Rank and Name
Malta ..	Qmr. & Hy. Lt. J. Green	Malta ..	Qmr. & Hy. Lt. A. Morrison
Tientsin ..	" " G. A. Benson	" ..	" " A. J. Pilgrim
Hong Kong	" " J. Glennon	Egypt ..	" " B. E. Essex
Gibraltar..	" " E. P. Offord		

EXAMINATIONS.

The following results of examinations are notified for general information : —

Passed in Military Law for the rank of Lieutenant-Colonel : Major L. P. More, M.B. (-8) ; Captains W. E. Hudleston and W. M. H. Spiller, M.B. (-8).

Passed in (h) i for the rank of Captain : Lieutenants G. S. C. Hayes, C. E. W. S. Fawcett, M.B., and H. Harding, M.B.

Passed in (h) iii for the rank of Captain : Lieutenant A. S. Arthur, M.B.

Passed in (h) ii and iii for the rank of Captain : Lieutenants J. H. Douglass, M.D., G. E. Cathcart, W. Wiley, M.B., H. Harding, F. J. Garland, M.B., A. A. Meaden, R. J. Cahill, M.B., J. F. C. Mackenzie, M.B., H. T. Wilson, E. J. H. Luxmoore, M.

Sinclair, M.B., R. H. L. Cordner, A. W. Gater, A. A. McNeight, M.B., C. W. O'Brien, E. L. Moss and C. F. White, M.B.

Passed in (d) ii for the rank of Captain: Captain C. R. Sylvester-Bradley; Lieutenants F. J. Turner, J. H. Douglass, M.D., A. S. Arthur, M.B., G. E. Cathcart, W. Wiley, M.B., H. Harding, M.B., F. J. Garland, M.B., A. A. Meaden, R. J. Cahill, M.B., J. F. C. Mackenzie, M.B., H. T. Wilson, E. J. H. Luxmoore, M. Sinclair, R. H. L. Cordner, A. W. Gater, A. A. McNeight, M.B., E. L. Moss and C. F. White, M.B.

REGISTER FOR INDIAN SERVANTS.

Few officers on going to India have not experienced the difficulty of getting good servants. The discomforts on arrival and of a long journey up country, unprovided with a bearer, or, what is worse, provided with a hastily selected man, taken haphazard from the crowd of indifferent or bad characters who congregate in Bombay, have fallen to the lot of most of us, whilst the period of trial and vexation until a proper staff of servants is secured is familiar to us all.

In our Corps, with regular annual reliefs, it should not be difficult to arrange for an interchange. Officers leaving India would then be able to provide places for the good and tried retainers they are relinquishing, and new arrivals would, by taking on these men, be spared many of the worries and troubles which now befall them. Further, good servants would not be lost to the Corps, and the prospects of continuous employment could not fail to have attraction for the better class of men.

With these ends in view, officers due home from India are requested to communicate to the Journal particulars of servants whom they can recommend, so that officers going out in relief may have an opportunity of securing these men. The particulars required are:—

- (1) Class of servant.
- (2) Whether for bachelor or married officer.
- (3) District or station to which he belongs.
- (4) Any special recommendations.

NOTE.—The date the officer leaves India should also be stated, and when and where the servant will be available.

The following particulars of a servant—Abdul Ghain—are sent by Captain D. O. Hyde, R.A.M.C., who writes from Khandala, Bombay Presidency: “The man has not been my servant, but he has applied to me, and as I lived for some two years with Major Stables, R.A.M.C. (R.), when he was in the Major’s employment, I can vouch for his respectability. He served with Major Stables for some seven years, and would be an excellent servant for a bachelor who was fond of shooting trips.” Address: c/o Jorah Singh Singh, c/o T. R. Badger, Esqre., 12th Royal Lancers, Ambala, Punjab.

RELIEFS—TOUR-EXPIRED OFFICERS.

The following is a list of tour-expired officers who will be relieved in the Commands named during the coming trooping season:—

India.—Lieutenant-Colonels M. W. Kerin, H. G. Hathaway, J. R. Dodd, W. Rowney, D. F. Franklin, H. J. Barratt, W. A. Morris, A. E. Tate, C. C. Reilly, W. Turner, S. G. Allen, B. L. Mills; Majors B. H. Scott, L. Way, E. W. Slayter, R. C. Lewis, F. G. Faichnie; Captains R. S. H. Fuhr, D.S.O., J. E. Hodgson, L. W. Harrison, E. B. Knox, C. C. Cumming, T. Biggam, W. M. H. Spiller, L. L. G. Thorpe, W. S. Crosthwait, J. F. Whelan, W. H. Odlum, W. M. Power, W. R. P. Goodwin, E. S. Worthington, A. J. W. Wells, M. W. Falkner, F. E. Rowan Robinson, M. F. Foulds, A. McMunn, T. F. Ritchie, A. J. Williamson, H. Rogers, W. Davis, L. Cotterill, H. W. Long.

Gibraltar.—Lieutenant-Colonel D. V. O’Connell; Majors W. H. Horrocks, O. L. Robinson; Captain L. F. F. Winslow.

Malta.—Captains E. Ryan, J. H. R. Winder.

Straits Settlements.—Captain J. H. Duguid.

Jamaica.—Major F. M. Mangin.

Mauritius.—Major N. Manders; Captain H. E. Staddon.

Bermuda.—Major S. F. St. D. Green.
North China.—Major K. B. Barnett.
South China.—Captain R. M. Ranking.
Egypt.—Major A. C. Fox.
Ceylon.—Captain J. L. Jones.

LIST OF CAPTAINS, ROYAL ARMY MEDICAL CORPS, JOINING THE ROYAL ARMY MEDICAL COLLEGE ON AUGUST 1, 1907.

From the Irish Command.—Captains E. Brodribb, J. Tobin, G. H. Sheehan, J. W. West, S. M. Adye-Curran, A. W. A. Irwin, B. A. Craig, R. N. Wordley.
London District.—Captains F. S. Penny, H. Simson, E. P. Sewell, A. E. Hammerton.
Eastern Command.—Captains L. M. Purser, A. F. Weston, C. H. Straton, L. Wood, J. Powell, G. H. Goddard.
Aldershot Command.—Captain W. L. Baker.
Scottish Command.—Captains F. W. Lambelle, J. M. Cuthbert, F. P. Lauder.
Southern Command.—Captains E. V. Ayles, A. R. C. Parsons.

EXAMINATION OF MAJORS, ROYAL ARMY MEDICAL CORPS, FOR PROMOTION.

Army Medical Organisation in Peace and War.—(Time allowed, three hours.) (Total marks, 100.) *May, 1907.*

(1) Give the personnel of a Cavalry field ambulance, how many field ambulances are allowed for a Cavalry division, and state how the arms and accoutrements of sick and wounded sent to a field ambulance are dealt with. (25 marks.)

(2) What hospital accommodation is provided for Militia units when up for training, and how are Militia patients, who are unfit to travel at termination of training, provided for? (15 marks.)

(3) What are the diseases for which the Medical Officer in charge effective troops is required to render Army Form A 35 for the information of the Principal Medical Officer? (15 marks.)

(4) A reservist, suffering from rupture, is recalled to the Colours. Is he fit for duty? If so, for what duty? (5 marks.)

(5) Describe the syphilis register, and what are the rules to be observed in keeping the register? (20 marks.)

(6) What are the regulations for the training of regimental stretcher bearers? How many attendances at lectures and drills are required, and what is the procedure for the inspection of a class when the course is completed? (20 marks.)

Sanitation and Epidemiology.—(Time allowed, three hours.) (Total marks, 100.) [N.B.—Each question has the same value.]

(1) You are Senior Medical Officer in charge of troops, in an island where the drinking water supply is necessarily derived from stored rain water. The method of sewage disposal is by cesspits. The rainfall is considerable, and is distributed fairly evenly throughout the twelve months; the relative humidity is high, and the climate sub-tropical.

Give an outline of your recommendations for collecting, storing, and safeguarding the rainfall for drinking purposes.

(2) The scale of rations for troops in the field in South Africa, 1900-01, was essentially as follows:—

Bread	..	..	..	..	..	..	1½ lb.
Or biscuit	..	..	..	..	..	..	1 „
Fresh meat	..	..	..	..	..	..	1½ „
Or preserved meat	..	..	..	..	..	..	1 „
Potatoes or other vegetables	..	..	..	..	..	..	½ „
Jam	..	..	..	..	..	..	¼ „
Sugar	..	..	..	..	..	..	3 oz.

Tea and other food adjuncts were also supplied.

Do you consider this a good ration? If not, why not? And what alterations would you propose?

(3) If placed in medical charge of a small body of troops in standing camp, where removal of excreta is carried out by means of the pail system, state in precise detail what you would recommend as regards (a) care of the latrines, (b) removal, and (c) disposal of the excreta.

(4) You are in medical charge of troops at a station which has been destroyed by an earthquake. The sanitary arrangements have been entirely upset. State concisely (a) what recommendations you would make to meet the immediate emergency; and (b) the general lines on which you would work, pending the re-introduction of an organised system of drainage or sewage disposal.

(5) What are your views as to the spread of enteric fever by direct, or semi-direct, contagion (exclusive of conveyance by water, dust, and food supplies)? Mention any instances you know of. Describe what preventive or precautionary measures you would adopt in relation to this mode of spread.

(6) State concisely what you know of the causation of malaria. Mention the practical measures of prevention you would recommend, specifying the reasons for their adoption in each case.

New Syllabus. Selected Subjects.—(Time allowed, three hours.) (Total marks, 100.) [N.B.—Candidates to answer I., II., and III.]

I.

MEDICAL HISTORY OF MORE IMPORTANT CAMPAIGNS.

(1) What proportion of sick carriage was supplied for the Kabul—Kandahar march? Describe the different forms used, and state how it was allotted and employed. (20 marks.)

(2) Detail the principal considerations that influenced the selection of sites for general hospitals in the western area up to the time of the occupation of Bloemfontein. (15 marks.)

II.

ARMY MEDICAL SERVICES OF OTHER POWERS.

(1) State what you know about a "Field Hospital" of the Austro-Hungarian Army, and give a summary of the *personnel* employed in it. (15 marks.)

(2) Describe the duties of the field medical units of the German Army during and after an action. (15 marks.)

III.

LAWS AND CUSTOMS OF WAR SO FAR AS THEY RELATE TO THE SICK AND WOUNDED.

(1) What are the rules of the Geneva Convention, and their practical application, which would guide you in advising your Commander as to the treatment and disposal of a field medical unit of the enemy that had fallen into our hands? (20 marks.)

(2) Discuss what military organisations are, and are not, protected by the terms of the Geneva Convention, and define what relation to a belligerent is necessary to bring Red Cross and other aid societies under its terms. (15 marks.)

EXAMINATION FOR PROMOTION.—CAPTAINS.

Military Law. (d) ii.—(Time allowed, three hours.) (Total marks, 200.) [N.B.—Answers should be supported by references to the Army Act, Rules of Procedure, or King's Regulations; but a mere reference, unless it be specially asked for, will not be credited as an answer.]

(1) As a Commanding Officer deal summarily with the following cases in accordance with the remarks given for guidance:—

Name	Offence	Remarks for guidance as to punishment.
Private A ..	Drunk in barracks, July 1. Fifth case in twelve months; last case March 30	Maximum <i>minor</i> punishment and fine to scale.
Private B ..	Absent off pass, 12 midnight June 29 till 4 p.m. July 2	Maximum punishment.
Private C ..	Absent off pass, 10 p.m. June 1 till June 24	Maximum punishment.
Lance-Corporal D	Neglect of duty when orderly corporal	Treat severely.

(2) The following cases are brought before you as a Commanding Officer on June 1, 1907. For what offences and under what sections of the Army Act would you propose that they be tried by Court-Martial?—

Private A has struck Private X on the head with a stick and severely injured him.

Private B has confessed desertion from another regiment and making away with his kit on January 1, 1904.

Private C has confessed that he deserted from the Navy in June, 1905.

Private D, a militiaman, who has joined for training in 1907, has been absent from previous trainings in 1903, 1904, 1905, and 1906.

(3) Distinguish between a pass and a furlough. How would a soldier obtain an extension of furlough in case of sickness, and what action would be taken by his Commanding Officer if he obtained an extension of furlough under false pretences?

(4) Is it necessary that a prosecutor at a Court-Martial should be sworn? Can the prosecutor remain present when the court is cleared? May the prosecutor cross-examine the accused when the latter elects to himself give evidence for the defence? Give full explanatory answers.

(5) Explain, with the aid of an example, how a defect in the particulars of a charge may be amended by the finding of the court. Give also an example of a case where a soldier accused of a distinct offence may be found guilty of another offence of a similar but less serious character.

(6) You are the senior officer in charge of drafts going to India on a hired transport. Describe the powers you possess to maintain discipline. How would your powers be restricted in the event of the troops being conveyed on one of His Majesty's ships?

(7) A witness before a Court-Martial is, as a rule, obliged to answer all questions put to him. State in general terms the various cases in which a witness would be justified in refusing to answer.

(8) Explain fully the regulations as to the entry in the regimental books of the conviction of a soldier by a civil court. In what case would no entry be made?

(9) Under what circumstances, to what offenders, and for what offences can "summary punishment" be awarded on active service? Give your opinion as to the value of the punishment.

(10) Describe the duties of a confirming officer in the following cases, considered separately. He is of opinion:—

(i.) That the sentence of the court is too lenient.

(ii.) That the accused has been convicted on hearsay evidence.

(iii.) That the proceedings are irregular, but not absolutely illegal.

(iv.) That the finding of acquittal is not in accordance with the evidence.

(11) State the regulations as to the (i.) assembly, (ii.) constitution, (iii.) method of taking evidence, and (iv.) record of proceedings of a Court of Inquiry assembled to determine the illegal absence of a soldier.

(12) Under what circumstances are men in the Army Reserve liable to be tried by Court-Martial? Show that in a modified way they are always subject to military law.

(Alternative Questions to any of the above for Officers of the Canadian Permanent Forces.)

(13) Explain, with the aid of examples, the meaning of the expressions "offer of violence," "lawful command," "superior officer," "in execution of his office."

(14) Describe how the offence of absence without leave committed by a private soldier can be summarily punished by his Commanding Officer.

DEPÔT, ROYAL ARMY MEDICAL CORPS.

EXAMINATION OF LIEUTENANTS ON PROBATION, ROYAL ARMY MEDICAL CORPS AND INDIAN MEDICAL SERVICE, APRIL, 1907.

Corps Duties. (Time allowed, two hours.)

(1) What is meant by the term "sick report"? Enumerate and explain the various entries that may be made upon one by you.

(2) What is the procedure adopted to ensure the continued treatment of cases admitted to military hospitals suffering from syphilis?

(3) What do you mean by the term "loan equipment of surgical instruments"?

(4) (a) What medical and surgical equipment is drawn by a medical officer in charge of an infantry regiment proceeding on active service? (b) From whence is it obtained? (c) How is it carried in the field?

(5) Describe, briefly, the duties of a medical officer doing duty with troops on the line of march, with special reference to the treatment and disposal of casualties.

Map Reading. (Time allowed, two hours.)

(1) Describe how you would "set" a map preparatory to reading it.

(2) Define a "contour line," giving a natural example of one, and state what information these lines convey to the person reading the map.

(3) Represent, by the ordinary recognised conventional signs, a railway, showing (a) a cutting, (b) a tunnel, (c) an embankment, (d) a level crossing, (e) a bridge.

(4) What points, which could be gathered from reading a map, would influence you in selecting a probable site for a camp?

(5) What information could a map afford you when wishing to march with transport from one position shown on it to another?

Military Law. (Time allowed, two hours.) [The first three questions to be answered by officers of both services. Questions 4 and 5 for Royal Army Medical Corps Officers only. Questions 6 and 7 for Indian Medical Service Officers only.]

For all Officers.

(1) (a) For what kinds of offences may a private soldier be confined in the guard detention room? (b) State the regulations as regards bedding and exercise for soldiers confined in the guard detention room.

(2) When has the soldier the right to elect to be tried by District Court-Martial, instead of being dealt with by his Commanding Officer?

(3) (a) What persons are subject to the jurisdiction of a District Court-Martial? (b) What are the powers of a District Court-Martial?

For Royal Army Medical Corps Officers only.

(4) State the forfeitures of pay (if any) involved in the following cases of absence without leave:—

- | | |
|-----|---|
| (a) | From 6.30 a.m., January 23, to 6 p.m., same date. |
| (b) | " " " 6 a.m., January 24. |
| (c) | " " " 12 noon, same date. |
| (d) | " " " 2 a.m., January 31. |

(5) Define the term "Court of Inquiry," and state the duties of a Court assembled to inquire into a case of illegal absence.

For Indian Medical Service Officers only.

INDIAN ARTICLES OF WAR.

(6) How can offences by native followers be punished under Indian Articles of War on active service?

(7) Give some of the definitions of "grievous hurt" as laid down in the Appendix to the Indian Articles of War.

Interior Economy.—(Royal Army Medical Corps.) (Time allowed, two hours.)

(1) What are the various ranks in the Corps, and how would you recognise them?

(2) What is meant by the term "messing and kit allowance"?

(3) What are the total emoluments of an unmarried Quartermaster-Sergeant of the Corps?

(4) Briefly describe what is meant by the term "hospital stoppages."

(5) Enumerate the articles of personal clothing, and state what becomes of them when the owner is discharged from the Service.

Indian Army Regulations.—(Indian Medical Service.) (Time allowed, two hours.)

(1) What is the position of a medical officer in charge of a native regiment? What facilities has he with regard to a charger in the case of mounted corps?

(2) What rules are laid down for officers (a) under arrest; (b) on the sick list.

(3) Distinguish between dismissal and discharge. When should a man be dismissed, and by whom can this be done?

(4) What is the Army Bearer Corps, and what are the Permanent Records of the Corps?

(5) What Boards are held in India for the purpose of invaliding, and what rules are laid down as to their composition?

EXAMINATION QUESTIONS A.F. C.344.

The following were the written questions set for the May Examination of non-commissioned officers and men for the "Certificate of Training as a Nurse."

Anatomy.

- (1) Enumerate the cranial nerves, stating which are (a) nerves of special sense, (b) motor nerves.
Give a general description of any one nerve of special sense.
- (2) Describe the pelvic cavity. What bones enter into its formation? Enumerate its contents.
- (3) Describe the liver in regard to (a) its general appearance, (b) its position, (c) its general relations with special regard to other organs.

Physiology.

- (1) What changes does air undergo during respiration? Explain the terms (a) asphyxia, (b) dyspnoea, (c) syncope.
- (2) Explain the excretory system. What parts of the body are concerned in it?
- (3) Enumerate as many glands of the body as you can, giving their respective functions.

Ward Management.

- (1) A ward of four beds has lately been occupied by cases of an infectious nature. What methods would you adopt in disinfecting the following: (a) Mattress, bed, bedding and linen; (b) bedsteads, tables, chairs, &c.; (c) crockery and utensils?
- (2) Explain in what ways ward orderlies can help in the careful and economical management of a hospital.
- (3) Describe in detail the instructions you would give to an assistant orderly (say a probationer in the nursing section) as to: (a) The procedure on admission to the ward of a new patient. (Stretcher case.) (b) Bathing him. (c) Any other special points about the patient which should be observed and reported.

Sick Cookery.

- (1) What foods should be avoided in the diet of a patient suffering from "Bright's disease," and for what reasons?
In a serious case what diet would be given?
Give a list of suitable diets for three meals when the patient's condition has improved.
- (2) Describe the process of peptonising milk and one method of preparing meat juice.
- (3) Describe the method you know for making "whey." In what circumstances may whey be found useful? What is its value as an article of nourishment?
- (4) Give the necessary ingredients and describe the method for making mutton broth suitable for convalescent patients.

NOTE.—(2) and (3) are alternate questions. One only to be answered.

Surgical Nursing.

- (1) What is the operation of tracheotomy?
Mention some common causes that may necessitate such an operation.
Describe fully the orderlies' duties with regard to (a) preparing for the operation, (b) after-care of the patient, (c) precautions to be taken to safeguard personal health.
- (2) Explain what is meant by (a) primary hæmorrhage, (b) intermediary hæmorrhage, (c) secondary hæmorrhage, (d) concealed hæmorrhage.
What symptoms in a patient would lead you to suspect the presence of the latter?
- (3) Explain the terms used in describing and classifying fractures.
Mention three ways in which a fracture may be caused, giving examples.
In the case of a simple fracture of the femur describe (a) how you would render "first aid," (b) how you would prepare the patient's bed, (c) how you would remove his clothing, (d) and what you would get ready for the officer to set the bone?

Medical Nursing.

- (1) Describe fully two methods by which a patient's temperature may be reduced.
- (2) (a) By what means may poisons be taken into the system? (b) Describe the action of (i.) narcotic poisons, (ii.) corrosive poisons, (iii.) irritant poisons, giving

examples of each. (c) What commonly available emetics may be given in cases of poisoning and in what quantities? (d) In what cases should emetics not be given?

(3) Describe what is meant by the term "pneumonia." Give some account of this disease as to (a) the symptoms from the onset, (b) the temperature in a typical case, (c) the points requiring attention in the nursing.

N.B.—Acute croupous or lobar pneumonia is meant.

Duties of Operating Room Attendant.

(1) Enumerate the instruments and surgical appliances which should be prepared for the operation of radical cure of hernia.

(2) Give in detail the duties required of the operating room attendant in preparing for and during an operation performed under aseptic conditions.

(The nature of the operation should be stated.)

(3) Describe fully the management and working of a steam-pressure steriliser (not the small steriliser).

(4) Alarming hæmorrhage occurs during an operation calling for infusion (not transfusion). Describe (a) the apparatus you would get ready, (b) how you would prepare the saline solution.

NOTE.—(3) and (4) are alternate questions. One only to be answered.

THE SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

At a meeting of medical men, biologists, and others interested in tropical diseases, which was held in London on May 10, the Society of Tropical Medicine and Hygiene was duly constituted. Laws for the government and administration of the Society were, at the same time, considered and passed, and the first Council was elected.

The formation of a Society to promote the study of the diseases of warm climates and to facilitate intercourse and discussion among those who practise tropical medicine has long been desirable, but its inception on a sufficiently broad basis has only recently been found to be practicable. That end has, however, now been attained, the success of the movement having, in a great measure, been due to the approval and co-operation which it has received from the Schools of Tropical Medicine in London and Liverpool, from the Universities and other teaching bodies, from the Naval and Military Medical Services, and from the large and rapidly increasing number of physicians who are engaged in mission work and in the practice of medicine and hygiene in tropical countries. An interesting and important feature in connection with the Society is the active support which has been accorded to it by many eminent biologists, the value of whose assistance in their own field of research, by no means the least important department of tropical medicine, will not readily be over-estimated. The acceptance of seats on the first Council by representatives of these various Services, institutions, and interests, furnishes an effective guarantee as to the extent of the sphere of activity, and of the energetic and capable administration of the Society.

All registered medical men and others who are interested in sciences related to tropical medicine are eligible for election as Fellows; and the Council are empowered, for a period of six months, to elect without ballot, on application being made, and on their being satisfied as to the eligibility of the candidates, a limited number of original Fellows. The annual subscription is one guinea, there being at present no entrance fee. The headquarters of the Society have been established at 20, Hanover Square, where ordinary meetings will be held at 8.30 p.m. on the second Wednesday of every month except August and September.

The first meeting of the Society is fixed to take place on Wednesday, June 26, at 8.30, when it is expected that the President, Sir Patrick Manson, K.C.M.G., F.R.S., will deliver an inaugural address, and objects of interest in tropical medicine will be exhibited.

The first Council of the Society is as follows: *President*: Sir Patrick Manson, K.C.M.G., F.R.S., F.R.C.P.; *Vice-President*: Professor R. Ross, C.B., F.R.S., F.R.C.S.; *Treasurer*: W. Hartigan, M.D., 5, Bond Court, Walbrook, E.C.; *Secretaries*: F. M. Sandwith, M.D., F.R.C.P., 31, Cavendish Square, W.; W. Carnegie Brown, M.D., M.R.C.P., 32, Harley Street, W.; *Councillors*: Ernest E. Austen, F.Z.S.; Fleet-Surgeon Bassett-Smith, R.N.; James Cantlie, M.B., F.R.C.S.; C. W.

Daniels, M.B.; Lieutenant-Colonel G. M. Giles, M.B., F.R.C.S., I.M.S.; W. M. Haffkine, C.I.E.; C. F. Harford, M.D., C.M.S.; T. S. Kerr, M.B.; G. C. Low, M.B.; Professor E. A. Minchin, F.Z.S.; Lieutenant-Colonel C. H. Melville, R.A.M.C.; Professor G. H. F. Nuttall, M.D., F.R.S.; L. W. Sambon, M.D.; Arthur E. Shipley, M.A.; J. W. W. Stephens, M.D.; Fred. V. Theobald, M.A.

FOURTEENTH INTERNATIONAL CONGRESS FOR HYGIENE AND DEMOGRAPHY, BERLIN, 1907.

The German Steamship Companies, Norddeutscher Lloyd and the Hamburg-America Linie, have consented to allow to members of the Congress a reduction for passage tickets. The office of the Hamburg-America Linie in Berlin will procure rooms in different hotels for the members of the Congress. Detailed information concerning rates of reduction for tickets, &c., will shortly be published, and will be obtainable in the Bureau of the Congress, Berlin, 9 W., Eichhornstr. 9.

ROYAL ARMY MEDICAL CORPS ANNUAL DINNER, 1907.

THE Annual Dinner of the Corps was held at the Trocadero Restaurant on Monday, June 17, 1907 (Monday in Ascot week being the day fixed for this annual gathering). The Director-General was in the chair. Two hundred and thirteen tickets were issued to past and present members of the Corps, and the number actually sitting down to dinner was two hundred and three. This is a record attendance. Mr. Vesey Holt (Agent for the Corps) was the only guest. The following is a list of names:—

President : Sir Alfred Keogh, K.C.B. (Director-General). Mr. Vesey Holt (Guest).

Surgeon-Generals : Sir Wm. Taylor, K.C.B., K.H.P.; Sir Chas. MacDuffe, K.C.B.; Sir W. D. Wilson, K.C.M.G.; W. S. M. Price; H. S. Muir, C.B.; W. Burnett; Sir E. Townsend, K.C.B., C.M.G.; Sir T. J. Gallwey, K.C.M.G., C.B.; W. J. Fawcett, C.B.; W. J. Charlton; J. D. Edge, C.B.; W. Donovan, C.B.; R. H. Quill; W. S. Pratt, C.B.

Surgeon-Major-General : A. F. Bradshaw, C.B., K.H.P.

Deputy Surgeon-Generals : G. W. Don; J. H. Jeffcoat.

Colonels : J. Anderson; W. Babbie, V.C., C.M.G.; J. M. Beamish; G. D. Bourke, C.B.; D. Bruce, C.B., F.R.S.; Sir J. R. A. Clarke, Bart., C.B.; A. E. J. Croly; C. E. Harrison, K.H.S., Brigade of Guards; H. E. R. James; W. Johnston, C.B.; W. W. Kenny; T. F. MacNeece; M. Martin; J. Maturin; W. A. May, C.B.; A. P. O'Connor, C.B.; S. K. Ray; G. W. Robinson; C. Seymour; A. T. Sloggett, C.M.G.; C. A. Webb.

Surgeon-Colonel : W. T. Martin.

Brigade-Surgeon-Lieutenant-Colonel : W. J. Wilson.

Surgeon-Lieutenant-Colonel : C. R. Kilkelly, C.M.G., late Grenadier Guards.

Lieutenant-Colonels : G. W. Barefoot; H. J. Barnes; J. F. Beattie; C. Birt; J. P. H. Boileau; R. P. Bond; C. Garner; U. J. Bourke; Sir A. A. Brooke-Pechell, Bart.; H. Carr; A. Clarke; J. H. Clarkson; A. B. Cottell; R. C. Cottell; J. J. Crean; J. H. Curtis; F. A. B. Daly, C.B.; T. Daly; J. S. Davidson; A. M. Davies; J. R. Dodd; J. F. Donegan; W. S. Dowman; E. Eckersley; C. E. Faunce; R. H. Firth; H. J. Fletcher; R. Geddes, D.S.O.; J. Gormley; R. I. D. Hackett; R. H. Hall; M. L. Hearn; R. L. F. Henderson; F. W. H. D. Harris; R. P. Hetherington; F. S. Heuston; J. M. Irwin; J. M. Jones; L. Josling; R. Kirkpatrick, C.M.G.; G. T. Langridge; S. F. Loughheed, C.M.G.; C. J. Macdonald; W. G. Macpherson, C.M.G.; J. Maher; H. W. Murray; M. O'Halloran; C. E. Nichol, D.S.O.; R. H. Penton, D.S.O.; W. H. Pinches; J. H. Reynolds, V.C.; J. D. T. Reckitt; A. F. Russell, C.M.G.; M. W. Russell; R. J. S. Simpson, C.M.G.; C. S. Sparkes; A. A. Sutton, D.S.O.; H. N. Thompson, D.S.O.; H. O. Trevor; G. Trewman; D. Wardrop;

H. L. E. White; E. O. Wight; E. M. Wilson, C.B., C.M.G., D.S.O.; R. W. Wright; H. J. Wyatt.

Majors: R. F. E. Austin; T. B. Beach; G. Bray; H. Bray; H. J. M. Buist, D.S.O.; J. M. Buist; J. A. Copeland; V. Davoren; C. R. Elliott; P. Fowler; N. Faichnie; H. W. Grattan; E. M. Hassard; M. P. C. Holt, D.S.O.; B. J. Inniss; R. W. H. Jackson; J. A. O. MacCarthy; J. Moir; A. Moore; E. M. Pileher, D.S.O.; H. J. Pocock; C. E. Pollock; F. J. W. Porter, D.S.O.; G. T. Rawnsley; J. Ritchie; J. H. Rivers; L. F. Smith; C. G. Spencer; A. Stables; C. Stalkartt; G. B. Stanistreet; E. B. Steele; C. Stonham, C.M.G.; F. A. Symons; J. Thomson; H. C. Thurston, C.M.G.; H. S. Thurston; A. F. Tyrrell; F. J. Wade-Brown; J. C. Weir; C. W. H. Whitestone.

Surgeon-Majors: S. Guise Moores, Scots Guards; P. H. Whiston, Irish Guards.

Captains: S. M. Adye-Curran; R. B. Ainsworth; E. T. F. Birrell; G. W. Bliss; J. S. Bostock; H. Browne-Mason; J. M. Buist; B. B. Burke; S. G. Butler; J. T. Clapham; R. W. Clements; E. W. Cochrane; G. G. Delap, D.S.O.; J. H. Forrest; W. B. Fry; G. H. Goddard; W. R. P. Goodwin; P. H. Henderson; E. P. Hewitt; H. C. R. Hime; J. W. H. Houghton; E. T. Inkson, V.C.; J. C. Kennedy; T. Campion Lauder; R. H. Lloyd; J. Mackenzie; S. O'Grady; P. S. O'Reilly; L. E. L. Parker; F. M. Parry; F. S. Penny; R. L. Popham; T. J. Potter; J. Powell; J. J. W. Prescott, D.S.O.; N. J. C. Rutherford; A. H. Safford; A. A. Seeds; E. P. Sewell; H. F. Shea; S. W. Siberry; W. Sparkes; H. S. Taylor; T. B. Unwin; B. F. Wingate; L. Wood; W. A. Woodside.

Lieutenants: C. G. Browne; D. M. Corbett.

Honorary Members: Colonel Sir Frederick Treves, Bart., G.C.V.O., C.B.; Dr. J. Rose Bradford, F.R.S.; Dr. Louis C. Parkes.

The Chairman proposed the toasts of "His Majesty the King," and of "Her Majesty Queen Alexandra, the Prince and Princess of Wales, and the other members of the Royal Family," which were duly honoured.

Mr. T. W. Bennett (Bandmaster, R.A.M.C.), was in attendance with selected instrumentalists from the string band, who played the following selection of music:—

PROGRAMME OF MUSIC.

String Band under the direction of T. W. Bennett, Bandmaster, R.A.M.C.

- | | | | | |
|---------------------|-------|------------------------|-------|----------|
| 1.—GAVOTTE | .. .. | "Rosen" | .. .. | Czibulka |
| 2. .. .. | .. .. | "Traümerer" | .. .. | Schumann |
| 3.—VALSE | .. .. | "Couleur de Rose" | .. .. | Cloete |
| 4.—INCIDENTAL MUSIC | .. .. | "Monsieur Beaucaire" | .. .. | Rosse |
| 5.—SONG | .. .. | "Schlummerlied" | .. .. | Schumann |
| 6.—SERENADE | .. .. | "Flirtation" | .. .. | Steck |
| 7.—SELECTION | .. .. | "Miss Hook of Holland" | .. .. | Rubens |
| 8.—VALSE | .. .. | "Gold and Silver" | .. .. | Lehar |
- GOD SAVE THE KING.

The messes at the Royal Army Medical College and Aldershot kindly lent pieces of their plate to help adorn the tables.

As years roll by, our Annual Dinner increases in popularity, and a gratifying feature noticeable is the increased number of junior officers who are present.

THE ROYAL ARMY MEDICAL CORPS FUND.

FIFTH GENERAL MEETING.

The Fifth General Meeting was held at the Royal United Service Institution, Whitehall, on Monday, June 17, at 3 p.m., Surgeon-General Sir Alfred Keogh, K.C.B., Director-General, in the chair, supported by the Committee.

A statement of accounts to May 31, 1906, was distributed for the use of those present.

Before commencing with the Royal Army Medical Corps Fund General Meeting, the Chairman stated that he had been asked to say a few words on some matters of importance. "The first with regard to the College and the College Mess, which have

lately been opened. As a matter of fact we are not properly opened, as we are not completely furnished. All officers in the Corps on full pay are honorary members, and it is desirable that officers of the Corps should know it. The Commandant desires me to say that any officer who, when in London, wishes to see over the College will be welcomed by him, and he will be glad to show him round at any time. I have also to say that officers must excuse the present condition of the College. As a matter of fact, we had to hurry in quickly, by reason of our lease having expired of the quarters temporarily occupied as a College, and we were obliged to occupy the new building before quite finished.

"Secondly, in conformity with a wish which has been expressed that facility should be given to enable such officers dining at the Corps dinner as wish to sit together, we have arranged that a plan of the tables will be produced at 5 o'clock in the manager's office at the 'Trocadero,' with the seats numbered. Officers, by going there any time after 5 o'clock, will get a ticket giving them their number and place at table, so we hope that difficulty as to seats will thus be avoided. At 7 o'clock the plan will be moved up into the ante-room.

"The third subject on which I wish to speak is that of the new Society which we have started, a Society entitled 'The United Services Medical Society,' in London. I daresay, gentlemen, you think we ask you to subscribe for a very large number of purposes, and we are again appealing to you to subscribe to our new Society. I, myself, am very much opposed to asking you to pay any more money than you have to pay, but I have a very definite reason in asking you to subscribe, and I would especially like you to support this Society. I do not propose to detain you by explaining why you should support this project, but I think you will trust me with regard to this matter, and accept it from me that it is very desirable we should have a Society in London, and combine for scientific purposes with the other branches of the public service, the Navy, the Indian Medical Service, and the Volunteer Medical Service.

"Now, Gentlemen, I have to call your attention to the financial position in which we find ourselves with regard to the Royal Army Medical Corps Fund; I should like to say, as I have said at previous Corps meetings, the money you subscribe to the Royal Army Medical Corps Fund goes to three purposes, viz., the Band, the Dinner, and Memorials. You will see on the paper circulated we have a Charitable Schools Fund, General Relief Fund, and Widows' and Orphans' Fund. The General Relief Fund subscriptions are got from donations from our Regimental Institutes, and not from officers at all, except such officers as care to send subscriptions to this particular fund. Last year we asked for an additional subscription to the band, and this subscription having come in, I would like to add, the band was on May 31, £243 in credit, Dinner £368, General Relief £1,187, Widows' and Orphans' £51, Memorial £1,300, and Charitable Schools £1,152."

WIDOWS' AND ORPHANS' FUND.

"Now with regard to the Widows' and Orphans' a sum of £51 remains; it is proposed that this sum of £51 should now be transferred to the General Relief Fund, and that the Widows' and Orphans' Fund should thereby cease to exist. This is most desirable, and will relieve the Secretary of keeping accounts of this particular fund. The £1,187, General Relief, was made up largely by subscriptions from our own canteens, who have been very good to us during the past year, some very much better than others. The money subscribed from these canteens is used for cases of distress among men out of work, children and widows, and so on, who required assistance, and we hope that the Corps will continue to support this Fund."

CHARITABLE SCHOOLS FUND.

"With regard to £1,152 in the Charitable Schools Fund. This Fund will also die out in time, but it will last many years yet. We spend about £140 a year in maintaining children in schools, and, we are, I think, of very considerable use to the Corps in this respect.

"The total sum which we had in hand was £4,312 on May 31 last, which must be considered satisfactory.

"Now we have a very large number of funds. It is desirable I think that we should, generally speaking, endeavour to have one subscription to cover all purposes. We have discussed this matter in Committee, and have resolved that it would be desirable to think the matter out. How can this be accomplished? We have in addition the subscription to the Journal, and one cannot help feeling that these

subscriptions have grown up irregularly from time to time, although none have been in existence for more than five years. I think if we had a consolidated subscription for all purposes, the allotment being made to the various funds, this would be an advantage. Consequently the Committee propose that we should adopt the following resolution 'That seven members of the Committee will meet seven members appointed at the annual meeting to consider the allotment of the subscriptions to the Royal Army Medical Corps Fund, with power to act on the decision.' I should like to hear any remarks on this definite proposal; the Committee are quite prepared to discuss the question with you.

"Gentlemen, I want to add that I hope none of you will have the slightest hesitation whatever in saying what you think. I have been told some of you may not like to differ from us, but I do hope any one here who has anything to say will get up and speak boldly. We are not your masters, we are your servants; this fund is your fund, not ours. Please do express your views fully and freely."

A discussion then took place with a view of dealing with the subscriptions and the proposal put forward by the Committee.

Lieutenant-Colonel E. M. Wilson, C.B., C.M.G., D.S.O., first proposed that there should be a universal subscription of £1 for all ranks, that is to say, going back to what it was before the late increase of the band subscription.

Colonel Babbie, V.C., then proposed, that one subscription, and one subscription only, should be allotted for the three purposes without mentioning what purpose, and the Committee should have power to act on its decision.

Lieutenant-Colonel Faunce thought that the subscription under no circumstances should exceed 30s.

Surgeon-General Sir Thomas Gallwey, K.C.M.G., then proposed that there should be one subscription to be allotted to the three funds. This was seconded by Lieutenant-Colonel Wilson and carried.

Sir Charles Cuffe, K.C.B., then proposed that seven members of the Committee meet seven elected members of the General Meeting to discuss the above question, with power to act. This was seconded by Colonel James.

Colonel Babbie, V.C., then proposed an amendment that the seven Officers should be detailed by Principal Medical Officers of the Southern, Eastern, Aldershot and London Commands, to meet seven members of the Committee. The proposal as amended was then carried.

Lieutenant-Colonel Cottell proposed that the CORPS NEWS should be included in this one subscription. This was carried by 25 to 18.

Surgeon-General Quill proposed, and Surgeon-General Donovan, C.B., seconded, that the decision of the last resolution should be rescinded. This was not carried.

After a considerable discussion, Surgeon-General Sir Thomas Gallwey remarked that the first resolution was passed in connection with the three Funds to the effect that we should have one subscription. After the resolution had been passed and carried, a member of the Committee started another subject, viz., that the finance of the CORPS JOURNAL should also be considered by this Committee. This was somewhat of a surprise resolution, not having previously been considered by the Committee. Judging by the officers voting there was not a very decided opinion on either side, and as the number of officers present at this meeting was comparatively small, he thought that the Committee should consider this point and bring it before the next general annual meeting. It was finally decided that this Committee will also consider and report for the next annual general meeting on the advisability of the Royal Army Medical Corps subscription including the CORPS JOURNAL. This was carried. (This resolution would cancel the resolution proposed by Lieutenant-Colonel Cottell.)

It was resolved unanimously that the decision of the special Committee be published in the CORPS NEWS.

A vote of thanks was then passed to the Chairman and the meeting terminated.

St. George's Barracks, W.C.

F. W. H. DAVIE HARRIS, *Lieutenant-Colonel,*
Secretary.

ARMY MEDICAL OFFICERS' BENEVOLENT SOCIETY.

PROCEEDINGS of the Annual General Meeting held at 2 p.m., Monday, June 17, 1907, at the Royal United Service Institution.

Present.

Surgeon-General Sir Alfred Keogh, K.C.B., Chairman of the Society, in the Chair.

Sir Charles McD. Cuffe, K.C.B.

Colonel T. Ligertwood, C.B.

Colonel A. T. Sloggett, C.M.G.

Lieutenant-Colonel A. B. Cottell.

Lieutenant-Colonel J. Martin.

Colonel W. T. Martin.

Lieutenant-Colonel Poynder.

Lieutenant-Colonel W. G. Macpherson, C.M.G.

Lieutenant-Colonel A. M. Davies.

(1) The Minutes of the previous Annual Meeting were read and confirmed.

(2) The Cash Accounts for the year ending December 31, 1906, were considered, and on the motion of Colonel A. T. Sloggett, C.M.G., seconded by Sir Charles Cuffe, K.C.B., were duly received and passed.

(3) The following donations recommended by the Committee of Management for the present year were sanctioned and agreed to, viz. :—

Three orphans of W. D.	£50	0	0
Orphan of R. D.	15	0	0
Two orphans of G.	18	0	0
Orphan of B.	25	0	0
and McG. Pension	10	0	0
Orphans of W. K.	20	0	0
Orphan of A. T. S.	25	0	0
Orphan of T. K. C.	20	0	0
Orphans of W. S. L.	25	0	0
Orphan of R. W. T.	20	0	0
Orphan of M. Q.	20	0	0
Orphans of T. B.	30	0	0
Orphan of T. F.	20	0	0
Orphan of D. A.	30	0	0
Orphan of S.	25	0	0
Orphans of W. H. M.	20	0	0
Three orphans of E.	30	0	0
Orphans of C.	30	0	0
Orphan of A. S.	25	0	0
Orphan of de C.	25	0	0
Total	£483	0	0

(4) The Meeting then considered the new rules.

Colonel T. Ligertwood proposed, and Lieutenant-Colonel Macpherson seconded, a resolution that the words "of mental or bodily decrepitude" in Rule 4 should be omitted; this was carried.

It was resolved, on the motion of Lieutenant-Colonel Macpherson, C.M.G., that the following should be added to Rule 24: "and a sum is to be reserved out of the income for this purpose without reference to the Annual Meeting."

On the proposal of Lieutenant-Colonel Poynder, and seconded by Sir Charles Cuffe, the new rules were then passed with the above amendments.

(5) It was resolved, on the proposal of Lieutenant-Colonel Macpherson, and seconded by Lieutenant-Colonel Cottell, "That the Secretary should draw up a list of Life Members of the Society."

(6) It was resolved that Colonel H. E. R. James, Surgeon-General Sir Charles McD. Cuffe, K.C.B., Colonel T. Ligertwood, C.B., be elected Vice-Presidents for the ensuing year.

(7) The following were elected to serve on the Committee for the ensuing year: Lieutenant-Colonel A. M. Davies, Colonel T. Lane Notter, Lieutenant-Colonel A. B. Cottell, Lieutenant-Colonel W. G. Macpherson, C.M.G., Colonel A. T. Sloggett, C.M.G., Colonel C. Seymour, Captain E. P. Sewell.

(8) A letter was read from Messrs. Evans, Pierson and Co., chartered accountants, of Portland House, Basinghall Street, E.C., offering to make an annual audit of the accounts for the nominal fee of one guinea. It was resolved that Messrs. Evans, Pierson and Co. be thanked for their letter, and their offer accepted.

(9) It was proposed by Sir Charles Cuffe, and seconded by Lieutenant-Colonel A. M. Davies, and carried: "That any member of the Committee failing to attend four consecutive meetings of the Committee will be struck off the Committee."

(10) Lieutenant-Colonel F. W. H. D. Harris's appointment as Secretary was confirmed.

(11) A vote of thanks to the Chairman was then passed.

St. George's Barracks, W.C.

F. W. H. DAVIE HARRIS,
Lieutenant-Colonel, Secretary.

REPORT OF THE ARMY MEDICAL OFFICERS' WIDOWS' AND ORPHANS' FUND.

*Laid before the Ninety-second Annual General Meeting at the
Royal United Service Institute, London, on Monday, May 27, 1907.*

SURGEON-GENERAL SIR A. KEOGH, M.D., K.C.B., PRESIDENT, IN THE CHAIR.

The advertisement in *The Times*, convening the Meeting, having been read by the Secretary, the Accounts for the year ended December 31, 1906, together with the Committee and Auditors' Reports, were submitted, and were adopted and ordered to be printed and circulated amongst the Members of the Society.

The Committee of Management and Auditors for the year 1907-1908 were appointed, and the Auditors were empowered to employ a chartered accountant to assist them.

Sir James R. D. McGrigor, Bart., was appointed Treasurer.

A vote of thanks was passed to Mr. Andras, F.I.A., and he was appointed Consulting Actuary to the Society.

A vote of thanks was passed to the President, Vice-Presidents, Trustees, Committee of Management and Auditors, and the Chairman of the day.

REPORT AND ACCOUNTS FOR THE YEAR 1906.

Report of the Committee to the Members of the Army Medical Officers' Widows' and Orphans' Fund.

GENTLEMEN,—Your Committee have the pleasure to report on the affairs of the Society, and to submit the Accounts for the year 1906.

During the year the quinquennial Valuation Report of the Actuary was presented to you, showing that the financial position of the Society was exceptionally satisfactory, and after making provision in the reserves for all contingencies, the sum of £5,993 was, in accordance with his suggestion, applied under Rule X., for the benefit of members on the books on December 31, 1905, in the manner set forth in his Report.

For the first time, therefore, in the history of the Society the principle of distribution of surplus has, by means of the new Rule, been adopted.

Under the new Rules, and by the appropriation of surplus above-mentioned, provision has also for the first time been made in the case of every married member for the continuance of his widow's annuity to her child or children under twenty-one years of age, who, being lawful issue of the marriage, may survive the widow, payable until the child or youngest surviving child of the marriage attains the age of twenty-one years.

Your Committee have also Registered the new Rules, which make liberal provision for the benefit of old and new members.

During the year the only changes in the investments of the Fund have been as follows:—

Old Account.—The sum of £3,187 17s. 8d. has been invested with the National Debt Commissioners, and the sum of £2,000 withdrawn from them for payment of annuities.

New Account.—The sum of £700 15s. 6d. has been invested with the National Debt Commissioners, and the sum of £1,500 withdrawn from them for payment of annuities. The sum of £2,000 has been invested in the purchase of £2,298 15s. 10d. 2½ per cent. Consols.

The total value of the Stock Exchange Securities in the accompanying Balance Sheet is £16,468 4s. 7d., and the same securities had an aggregate market value at December 31, 1906, of £16,702 9s. 6d.

Your Committee will be obliged if the members will bring the advantages and strong financial position of the Society to the notice of their brother officers who have not yet joined the Fund, inasmuch as the benefits provided are obtained at a very much lower cost than from an ordinary Life Assurance Company. A Book of Rules containing tables of rates of subscription and particulars of benefits can be obtained upon application to the Secretary.

*War Office, S.W.
April 22, 1907.*

ALFRED KEOGH,
*Chairman of the Committee
Meeting of this date.*

BIRTHS.

AINSWORTH.—On June 10, at Tower House, Cromwell Road, S.W., the wife of Captain R. B. Ainsworth, R.A.M.C., of a daughter.

MURRAY.—On May 7, at Red House, Hythe, Kent, the wife of Lieutenant-Colonel H. W. Murray, R.A.M.C., of a daughter.

MARRIAGE.

LONGHURST—JARRATT.—On May 15, at St. Peter's, Eaton Square, by the Rev. H. Woffindin, Vicar of Holy Trinity, Tulse Hill, Bell Wilmott Longhurst, Major, R.A.M.C., eldest son of Sir Bell Longhurst, of the Woodlands, Barnes Common, and 28, Old Burlington Street, W., to Eleanor (Nellie), youngest daughter of the late William Otley Jarratt, Esq., of Hilderthorpe Lodge, East Yorks.

DEATH.

ARMSTRONG.—On May 10, at Weston-Super-Mare, Surgeon-Major Lancelot Armstrong, M.D., retired Medical Department, aged 77. He entered the Service April 7, 1854; was promoted Surgeon October 11, 1864; and Surgeon Major March 1, 1873. He retired October 8, 1876.

EXCHANGE.

The charge for inserting Notices respecting Exchanges in the Royal Army Medical Corps is 5/- for not more than five lines, which should be forwarded by Cheque or P.O.O., with the notice, to Messrs. G. STREET and CO., Ltd., 8, Serle Street, London, W.C., not later than the 22nd of the month.

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It is requested that all Cheques or Postal Orders for Subscription to the Journal, Corps News, Reprints, &c., be made payable to the "Manager, Journal R.A.M.C.," and not to any individual personally.

The Editor will be glad to receive original communications upon professional subjects, travel, and personal experiences, &c. He will also be glad to receive items of news and information regarding matters of interest to the Corps from the various garrisons, districts and commands at home and abroad.

All such Communications or Articles accepted and published in the "Journal of the Royal Army Medical Corps" will (unless the Author notifies at the time of submission that he reserves the copyright of the Article to himself) become the property of the Library and Journal Committee, who will exercise full copyright powers concerning such Articles.

Matter intended for the Corps News should reach the Editor not later than the 15th of each month for the following month's issue. All these communications should be written upon one side of the paper only, they should by preference be type-written, but, if not, all proper names should be written in capital letters (or printed) to avoid mistakes, and be addressed The Editor, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, War Office, Whitehall, London, S.W.

Communications have been received from Colonels F. J. Lambkin, W. J. R. Rainsford, C.I.E. Lieutenant-Colonels C. Birt, H. A. Haines, J. D. Reckitt. Majors S. F. Clarke, R. F. E. Austin, S. F. Green, M. P. C. Holt, D.S.O., F. W. Begbie. Captains E. W. Bliss, J. Dorgan, W. S. Crosthwait, A. J. Hull; E. D. W. Greig, I.M.S., J. H. P. Graham (M.). A. E. Barker, Esq., F.R.C.S.

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	8	0	5	6								
	16	0	9	6								
50	4	0	4	0	5	0	1	9	4	0	1	0
	8	0	6	9								
	16	0	12	0								
100	4	0	5	6	6	6	3	3	5	6	2	0
	8	0	9	0								
	16	0	16	9								
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	8	0	13	6								
	16	1	3	6								

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The publishers will be pleased to receive copies of the January, February and March, 1906, issues of the Journal, for which they are prepared to pay 1s. 8d. each. The copies are required for the purpose of making complete volumes for binding.

The following periodicals have been received: *British Medical Journal*, *Lancet*, *Army and Navy Gazette*, *St. Thomas's Hospital Gazette*, *Medical Press and Circular*, *The Royal Engineers' Journal*, *Guy's Hospital Gazette*, *St. Bartholomew's Hospital Journal*, *Journal of the Royal Sanitary Institute*, *The Journal of Tropical Veterinary Science*, *Journal of Tropical Medicine and Hygiene*, *Public Health*, *The Veterinary Journal*, *Journal of the Royal Institute of Public Health*, *Middlesex Hospital Journal*, *Journal of the Royal United Service Institution*, *Australasian Medical Gazette*, *Indian Medical Gazette*, *The Transvaal Journal*, *Der Militärarzt*, *Militärärzten*, *Archives de Médecine Navale*, *Bulletin de l'Institut Pasteur*, *Archiv für Schiffs- und Tropen-Hygiene*, *Le Caducée*, *Revista de Sanidad Militar*, *Archives de Médecine et de Pharmacie Militaires*, *Giornale Medico del 1° Esercito*, *Tidskrift i Militär Hälsovård*, *Gazzetta Medica Italiana*, *Annali di Medicina Navale*, *The Military Surgeon*, *American Medicine*, *The Philippine Journal of Science*.

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The back outside cover is not available for advertisements.

NOTICE.

The Corps News is printed as an inset to the Journal and separate copies may be subscribed for, price 2d. monthly.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

Corps News.

AUGUST, 1907.

ARMY MEDICAL SERVICE.—GAZETTE NOTIFICATIONS.

Major Alexander Y. Reily, M.B., retires on retired pay, dated June 22, 1907. He entered the Service February 5, 1887, and was promoted Major, February 5, 1899. His war services are as follows: Expedition to Dongola, 1896—Egyptian medal. Nile Expedition, 1898—Battles of Atbara and Khartoum. Despatches, *London Gazette*, September 30, 1898. Two clasps to Egyptian medal. Medal. South African War, 1902—Operations in the Transvaal, April and May, 1902. Queen's medal with four clasps.

The notification regarding the retirement on retired pay of Lieutenant-Colonel John L. Hall, which appeared in the *Gazette* of June 7, 1907, is cancelled.

Lieutenant Francis J. Turner to be Captain, dated March 4, 1907.

LONDON GAZETTE, JUNE 28, 1907.

The King has been graciously pleased, on the occasion of the celebration of His Majesty's Birthday, to give orders for the following promotions in, and appointments to, the Most Honourable Order of the Bath:—

To be Ordinary Members of the Military Division of the Third Class, or Companions: Surgeon-General Francis Wollaston Trevor, Army Medical Service, Principal Medical Officer, Western Command, India; Colonel George Deane Bourke, Administrative Medical Officer, Southern Command.

The King has been graciously pleased, on the occasion of the Fiftieth Anniversary of the Military Operations in India, 1857, to give orders for the following appointments to the Most Honourable Order of the Bath:—

To be Ordinary Members of the Military Division of the Third Class, or Companions: Surgeon-General Thomas Tarrant, K.H.P., Retired Pay, late Army Medical Staff; Deputy-Surgeon-General Edward Malcolm Sinclair, Retired Pay, late Army Medical Staff.

The King has been graciously pleased, on the occasion of His Majesty's Birthday, to give orders for the following appointments to the Most Eminent Order of the Indian Empire:—

To be Companions: Surgeon-Lieutenant-Colonel Warren Roland Crooke-Lawless, M.D., Coldstream Guards, Surgeon to His Excellency the Viceroy.

ARRIVALS HOME ON LEAVE.—From India: Lieutenant-Colonels F. W. G. Hall, T. G. Lavie, W. L. Reade, G. Wilson, J. J. Russell; Captains D. O. Hyde, W. M. MacDowall, A. C. Osburn, and G. A. K. H. Reed. From North China: Lieutenant-

Colonel M. L. Hearn. From Mauritius: Lieutenant-Colonel N. Manders. From Gibraltar: Major A. F. Tyrrell and Captain L. F. F. Winslow. From Egyptian Army: Lieutenant D. S. B. Thomson. From South Africa: Captain H. H. J. Fawcett.

POSTINGS.—Captain A. H. Morris to Scottish Command as Sanitary Officer. Captain J. McD. McCarthy to Western Command.

SELECTED LIEUTENANT-COLONEL.—Lieutenant-Colonel J. C. Culling has been selected for increased pay, under Article 365 of the Pay Warrant, dated June 8, 1907.

EXCHANGES.—Lieutenant-Colonel R. H. Hall and Major G. J. Buchanan; Lieutenant-Colonel F. S. Heuston and Major N. Faichnie; Majors G. A. T. Bray and I. A. O. MacCarthy.

SERVICE ABROAD.—The name of Captain M. G. Winder should be added to the list of officers who will be relieved in South Africa during the coming season.

The undermentioned officers' names should be added to the list of officers proceeding abroad: Lieutenant-Colonel W. B. Thomson, India; Lieutenant G. H. Stevenson, India; Lieutenant W. H. Forsyth, South Africa.

Lieutenant E. G. R. Lithgow will proceed to India from South Africa with the 12th Brigade, Royal Horse Artillery.

Lieutenant A. D. O'Carroll will proceed to India from Malta with the 1st Battalion Connaught Rangers.

The undermentioned officers have been selected for attachment to the units mentioned to carry out antityphoid treatment: Captain S. de C. O'Grady to 1st Battalion Yorkshire Regiment; Lieutenant G. H. Stevenson to 1st Dragoon Guards; Lieutenant A. S. Littlejohns to 13th Brigade Royal Horse Artillery; Lieutenant C. M. Drew to 2nd Battalion Bedfordshire Regiment; Lieutenant W. H. Gillatt to 3rd Battalion King's Royal Rifles; Lieutenant J. B. Mulligan to 1st Battalion Suffolk Regiment; Lieutenant W. H. Forsyth to 3rd Battalion Worcestershire Regiment.

APPOINTMENTS.—Major G. A. T. Bray appointed Embarking Medical Officer, Southampton. Captain A. H. Morris to be Sanitary Officer, Scottish Command, *vice* Captain C. F. Wauhill, appointed Assistant Professor of Hygiene at the Royal Army Medical College.

TRANSFER.—Major G. A. T. Bray from Eastern to Southern Command.

DIPLOMAS.—The following officers have obtained the D.P.H.: Captains S. M. Abye-Curran and R. B. Ainsworth (Ireland); Captain P. MacKessack (Cambridge). Lieutenant C. Scaife has obtained the Diploma in State Medicine of Dublin University.

LIST OF CASUALTIES:—

Transfers to other Corps.—7511 Staff-Sergeant E. G. Woolnough to Edinburgh Company, Royal Army Medical Corps Militia; 15948 Sergeant G. D. Christie to Colonial Government, Northern Nigeria; 19799 Private F. A. Clohesy to Liverpool Regiment; 460 Private A. Manning to 1st Suffolk Regiment.

Transfers to Army Reserve.—12456 Corporal R. F. Crawford, 12457 Corporal W. Wyness, 19078 Private A. M. Deavin, 19352 Private G. J. C. Buckley, 309 Private A. J. Turner, 319 Private W. Russell, 341 Private W. Warden, 321 Private J. Tasker, 327 Private G. Faulkner, 19033 Private S. C. Austin, 315 Private W. Gardiner, 312 Private R. G. Kent, 413 Private H. Layfield, 318 Private T. Bradshaw, 342 Private C. Barron, 320 Private G. F. Needham, 322 Private J. Donnelly, 292 Private J. M. Sandy, 19101 Private W. A. Flaxman, 325 Private J. Clark, 334 Private A. Barker, 335 Private C. H. E. Blackbourne, 343 Private P. Garry, 326 Private M. Donovan, 19092 Private L. W. Burton, 324 Private G. Knowles, 323 Private H. Hartwell, 328 Private L. Houghton, 329 Private M. Keelcher, 330 Private V. Menhinick, 331 Private J. Downey, 332 Private W. Kealey, 14654 Private F. Hawthorne, 344 Private S. Sharp, 345 Private J. Clifford, 348 Private J. G. Anderson, 349 Private P. Edwards, 350 Private H. A. Hogben, 347 Private D. Clarke, 346 Private J. Middleton, 352 Private B. McCann, 353 Private A. Smith, 362 Private H. Burns, 358 Private M.

Ring, 354 Private G. Carver, 355 Private T. Hadfield, 363 Private J. Keys, 356 Private C. H. Miller, 357 Private A. Whitton, 359 Private G. J. Watson, 351 Private J. Robinson, 19998 Private W. S. Williams, 131 Private S. Dossett, 19463 Private G. Miller, 377 Private J. W. Bourne, 378 Private F. Gibbons, 373 Private S. Hope, 372 Private F. W. Chapman, 382 Private W. Wilson, 374 Private J. Keighley, 366 Private J. Russell, 371 Private J. Oliver, 376 Private A. Sturge, 392 Private J. Sparkes, 381 Private L. Cline, 375 Private F. Taylor, 393 Private J. S. Threadgill, 384 Private C. Toy, 19111 Private M. Burns, 19112 Private J. Haley, 16885 Private T. Longworth, 369 Private T. Dorrington, 414 Private W. Fletcher, 386 Private A. Foster, 385 Private W. Corbett, 387 Private F. Bailey, 398 Private C. Davey.

Discharges.—5559 Sergeant-Major W. H. Hills, having reached the age; 6095 Sergeant-Major A. L. Martin, having reached the age; 7462 Quartermaster-Sergeant L. J. Kirk, termination of second period; 7734 Quartermaster-Sergeant E. J. Lunney, termination of second period; 7500 Staff-Sergeant C. Greenhough, termination of second period; 7063 Staff-Sergeant W. Moore, after three months' notice; 7474 Sergeant L. Huxtable, termination of second period; 8254 Sergeant H. J. Browne, after eighteen years; 7510 Sergeant C. Hammond, termination of second period; 7933 Corporal S. W. Barton, medically unfit; 4988 Private F. Blyth, after three months' notice; 7517 Private A. Peckover, termination of second period.

Arrivals Home from Abroad.—From Gibraltar, per s.s. "Ormuz": 9624 Quartermaster W. M. Speedy. From South Africa, per s.s. "Galician," July 1, 1907: 10119 Staff-Sergeant W. H. Timbrell, 10125 Sergeant A. Gibbs, 14296 Private A. Manser. From Hong Kong, per s.s. "Sumatra," June 23, 1907: 12184 Private P. Holland, 17598 Private W. Sparks. From Sierra Leone, per s.s. "Mendi," May 31, 1907: 12681 Private G. Plumb, 15383 Private W. Sawers.

THE FOLLOWING NON-COMMISSIONED OFFICERS AND MEN HAVE PASSED IN THE VARIOUS CORPS EXAMINATIONS FOR PROMOTION, &C.

For Quartermaster-Sergeant.—9018 Staff-Sergeant S. Taylor, 9095 Staff-Sergeant H. H. Taylor.

For Staff-Sergeant.—11250 Sergeant J. Sage, 11779 Sergeant G. Neenan, 17901 Sergeant G. P. Jones, 8558 Sergeant F. Page, 11812 Sergeant W. C. Banks, 12932 Sergeant C. Gordon, 11582 Sergeant J. Ryan, 9861 Sergeant C. Malyon.

For Sergeant.—9915 Sergeant E. Thiullier, 17901 Sergeant G. P. Jones, 14958 Lance-Sergeant H. Svady, 16227 Lance-Sergeant J. Ashworth, 10458 Corporal W. Langston, 18376 Corporal W. Lamkin, 18940 Corporal P. H. Musgrave, 15698 Corporal H. C. F. Collier.

For Corporal.—16247 Private E. S. Freemann, 12651 Private R. H. Bennett, 17145 Private T. B. Kirk, 19693 Private J. J. Hitching, 18490 Private H. Cooper, 19029 Private R. E. Harvey, 19236 Private E. F. Pettit, 19924 Private E. D. Barr, 19963 Private E. Goreham, 18411 Private G. H. Richards, 19563 Private H. Harrington, 600 Private A. F. Day, 17368 Private J. E. Skinnell.

As Compounders.—18385 Corporal F. W. Coupland, 15983 Corporal C. E. Lister, 11465 Corporal H. G. Lenton, 18577 Lance-Corporal F. L. Read.

EXTRACTS FROM CORPS ORDERS, DATED ALDERSHOT, JUNE 13 AND JULY 1, 1907.

(June 13, 1907.)

Promotions.—The following promotions to complete establishment will take effect from the dates specified: 7680 Quartermaster-Sergeant W. Carey, to be Sergeant-Major, *vice* T. W. Jent, discharged June 10, 1907.

(July 1, 1907.)

8176 Quartermaster-Sergeant J. Woollard, to be Sergeant-Major, *vice* W. H. Hills, discharged June 26, 1907.

**EXTRACTS FROM SPECIAL CORPS ORDER, DATED ALDERSHOT,
JUNE 27, 1907.**

Army Form C. 344.—Nominal Roll of successful candidates in the examination for Army Form C. 344, Certificate of Training as a Nurse, held in May, 1907.

Corps No.	Rank and Name	Per cent. of Marks	Corps No.	Rank and Name	Per cent. of Marks
12533	Lance-Corpl. H. C. Ward..	76	17925	Pte. F. Sheerin	63
13923	Pte. C. Stewart	73	14668	Lance-Corpl. A. Amsden..	62
10967	Cpl. J. W. Humphries ..	71	18335	Pte. W. J. Woolway ..	62
14082	„ G. Prince	70	18621	„ A. J. Walton	61
12487	„ C. Halliday	69	11656	Lce.-Corpl. H. J. V. Voisey	60
17427	„ L. Higgins	68	11417	Corpl. A. Bush	60
16756	Lance-Corpl. N. W. Brown	67	18443	Pte. G. Harris	60
19175	Pte. H. E. Stow	67	12619	„ M. Keohane	60
18979	„ S. R. Bushnell	66	18982	„ A. Newman	59
16110	„ J. Wellham	66	18969	Lance-Corpl. N. Gray ..	58
17826	„ T. Malone	66	19160	Pte. C. J. Preston.. ..	57
17573	„ C. Harlen	65	12385	„ F. A. Rayner.. ..	56
12709	Lance-Corpl. H. J. Ford..	65			

Should the names of any candidate who sat for this certificate in the recent examination not appear in this list it will be understood that they failed to qualify. This remark applies, or will apply, to the case of previous or future examinations for this certificate.

EXTRACTS FROM THE "LONDON GAZETTE," NO. 28,036, DATED JULY 2, 1907.

WAR OFFICE, JULY 2, 1907.

The following despatches have been received by the Secretary of State for the Colonies:—

(Received July 26, 1906.)

Despatch from Acting Commandant, Northern Nigeria Regiment, West African Frontier Force, dated Zungeru, March 24, 1906:—

"I have the honour to forward herewith the despatch of Major Goodwin on the recent operations near Sokoto."

"I would bring to your notice the services of the following officers and non-commissioned officers and men, all of whom appear worthy of recognition."

"Sergeant H. Bullock, R.A.M.C., who worked untiringly in the care of the sick and wounded."

(Signed) J. HASLER, *Lieutenant-Colonel.*

Despatch from Officer Commanding Mounted Infantry, dated Sokoto, March 12, 1906:—

"Sergeant H. Bullock, R.A.M.C., has been untiring in his care of both Europeans and natives in the Mounted Infantry since leaving Kano. The valuable work done by him has contributed not a little to the satisfactory state of health of all ranks in the column."

(Signed) A. D. GREEN, *Major.*

Despatch from Commandant, Northern Nigeria Regiment, West African Frontier Force, dated Zungeru, May 20, 1906:—

"It is difficult to particularise where all did well, but the following deserve special mention."

"Medical: Staff-Sergeant W. Woodell."

"The Medical Department attached to the force showed zeal and solicitude in caring for the health of the troops. They had a large number of wounded of the enemy to deal with."

(Signed) A. LOWRY COLE, *Colonel*.

NOTES FROM BANGALORE.—Lieutenant J. H. Douglass, R.A.M.C., writes (June, 1907): "Lieutenant-Colonel Starr and Lieutenant Fawcett are away on leave, and consequently the Mess is very empty, although we have doing duty with us Lieutenant Leslie and Lieutenant Lorrimer, I.M.S."

"The hockey team has been resurrected, and Captain Kelly has now got quite a good team together. Last month we played the 56th Battery R.F.A. and the Napier Rifles, both of which matches we won."

"We have been free from enteric fever until the last week, when we got an epidemic amongst the 1st Sherwood Foresters; most of the cases were contracted at a camp of exercise about ten miles outside of Bangalore. The 14th Hussars have only had one case since they have been here, and he was an uninoculated case and died. About 400 of the regiment have now been inoculated."

NOTES FROM BRITISH EAST AFRICA.—Captain R. E. G. Phillips, R.A.M.C. (R.), writes (June 4, 1907): "Having been a few days in British East Africa, I thought perhaps a line giving my impressions of the country might possibly be of interest to my late brother officers. One lands at Kilindini; then to the Custom House, where arms have to be left, unless one is prepared to pay a small fee for a licence. Your baggage duly passed, you proceed with carriers to the tram terminus, *en route* for Mombasa, about two miles distant. The tram cars are weird, and have seating accommodation for four only, and are worked by natives. Fare, 4 annas. On arrival at Mombasa you have choice of two hotels. The English club is a very good one and, if possible to get a bedroom, the best place to stay at. Mosquitoes abound at night and perform their unpleasant vocation with avidity. The town itself is one of interest and possesses many good public buildings. The Governor, Colonel Hayes-Sadler, is now in residence there. The Principal Medical Officer is Lieutenant-Colonel Wills, R.A.M.C. From Mombasa to Nairobi, you leave at 11 a.m. on Friday and reach Nairobi at 11.15 the following morning. The journey is a pleasant one, as the country is, at any rate at this season of the year, beautifully green, and the show of wild beasts is one that must be seen to be believed: giraffe, buffalo, ostrich, zebras, and buck of all kinds abound, and appear to take but little interest in the passing train. The King's African Rifles are here. The officers are white men, and the N.C.O.'s, with the exception of the Sergeant-Major, black. Their quarters are pleasantly situated on high ground. The chief part of the town itself is erected on what the majority of people would consider, taking into consideration the surrounding country, not the best possible site. It probably has a good deal to do with the necessary position of the railway station. Horse and cattle diseases I am told by a veterinary officer are rife; and apparently it is a country for rubber and cotton. To sum up, as I have already written more than I intended, as a first impression, I do not think, at present, it is a country to settle in or put capital into."

NOTES FROM MALTA.—Lieutenant F. E. Roberts, R.A.M.C., writes (July 11, 1907): "The summer weather having now commenced, it was decided at the officers' monthly meeting to postpone these meetings till October 1. Major C. B. Lawson read some interesting notes on a case of aneurysm of the abdominal aorta, on which he had operated six weeks previously, introducing a Colt's and D'Arcy Power's wisp, the patient having subsequently shown marked improvement and has now been invalided home."

"The cricket season has been in full swing for the last two months; the Corps team have won three matches, lost three and drawn one. The team is much the same as last year, except that Lieutenant Maughan has joined from Crete, being a useful addition both as wicket-keeper and run-getter, and has taken over the captaincy of the team. In the match for the Governor's Cup we were drawn against the Lancashire Fusiliers, which we lost, Privates Fish and McCaig's wickets falling for less than ten runs, these two being our big run-getters. Lieutenant Maughan got 28 and 22 respectively."

NOTES FROM SECUNDERABAD.—Lieutenant R. R. Lewis, R.A.M.C., writes (June 25, 1907): "The monsoon has broken and we have had several sharp storms in the evenings. The continual wind is rather trying, but on the whole the weather is

pleasant, quite cool, and very little rain falls during the daytime. So far the general health of the troops is good.

"Lieutenant-Colonel F. P. Nichols, R.A.M.C., arrived here a short time since and has assumed command of No. II. Section Hospital. We hope shortly to be up to our full strength of officers. Lieutenant T. S. Blackwell, R.A.M.C., arrived in the latter part of March and is posted to No. II. Section Hospital. Captain R. H. MacNicol, R.A.M.C., shortly goes home on three months' accumulated privilege leave.

"Lieutenant R. R. Lewis, R.A.M.C., has returned from a two months' shoot in the Nizam's dominions, and was successful in shooting one tiger. The party consisted of four guns, and the total bag, besides numerous varieties of small game, included five tigers, one bear and one panther; but sport was poor owing to the very inclement weather, heavy rainstorms occurring daily.

"On Wednesday, June 12, Lieutenant-Colonel J. Battersby and officers R.A.M.C. gave a dinner at the Club, to entertain the Hon. Mr. O'Dwyer, British Resident, and Staff, and Major-General E. O. Hamilton, C.B., Commanding 9th Division, and his Staff. Most of the Heads of Departments in the Station were also present, including Lieutenant-Colonel Gimlette, C.I.E., I.M.S., Residency Surgeon, Lieutenant-Colonel Thompson, I.M.S., Staff-Surgeon, and Major Wake, Cantonment Magistrate. Colonel Battersby gave us an excellent menu. The floral decorations and arrangements were all that could be desired, and our Commanding Officer was indefatigable as a host. The dinner was voted quite a success, and we all hope it is the forerunner of many more to come."

NOTES FROM SIMLA, INDIA.—Lieutenant-Colonel H. B. Mathias, D.S.O., R.A.M.C., Officiating Secretary to the Principal Medical Officer, His Majesty's Forces in India, Simla, writes (June 19, 1907):—

"*Appointments.*—Lieutenant-Colonel D. Hennessy to command Station Hospital, Deolali. Major St. J. B. Killery, to command Station Hospital, Shwabo.

"*Leave.*—The following officers have been granted extension of leave in England: Captain T. Biggam, leave on medical certificate up to October 17, 1907; Captain J. E. Powell, leave on private affairs, one month, from September 12, 1907; Lieutenant D. P. Johnstone, leave on medical certificate up to August 25, 1907.

"*Transfers.*—Major T. W. Gibbard has been transferred to Simla for special duty at Army Headquarters.

"A course of instruction in sanitary methods, rules and regulations, as carried out in Indian cantonments, was instituted last winter for young officers of the Royal Army Medical Corps and Indian Medical Service on first arrival in the country. The nature of the diseases to be combated, the social and religious customs and prejudices of the various races, and the limited resources of money and material, make large modification from European methods necessary; and up to the present medical officers have had a good deal to learn and unlearn before they could be sure of their ground in these matters. Lieutenants of both Services are now posted on arrival either to Rawal Pindi, Poona, Lucknow, or Bangalore, for one month for this course, which is carried out under the supervision of the Senior Medical Officer and Sanitary Officer. The instructors are medical officers, nominated by the Principal Medical Officer, India, and demonstrations on various subjects have been given by other officers, staff, engineer and medical. The course consists of demonstration and inspections in all parts of the lines of British and Indian troops, bazaars, Government dairies, bakeries, slaughter-houses, trade premises of dairymen, bakers, butchers and ærated water manufacturers, *dhobies'* houses, market and water supplies, methods of washing clothes, surface drainage, removal and disposal of sewage and refuse, anti-malarial measures, disinfection, cantonment hospitals, control of venereal diseases, plague prevention, methods of hospital administration, &c. The officers under instruction thus have an opportunity of learning something of native customs, and are encouraged to learn the vernacular, so as to be less dependent upon their subordinates when first put in responsible positions. At the above-named stations the officers undergoing instruction are made honorary members of the regimental or Royal Army Medical Corps messes, and thereby obtain facilities for picking up many valuable hints which new-comers are thankful for. Several regimental officers have voluntarily joined the classes.

"As the result of the abolition of the three Commands which took effect from June 1, the Medical Services, like other branches of the Army in India, have been considerably affected. Amongst the principal changes are the following: The three Surgeon-Generals of the Northern, Eastern and Western Commands are posted to the 2nd (Rawal Pindi), 8th (Lucknow), and 6th (Poona) Divisions respectively, but without

any loss of emolument. Of the three displaced Colonels, one goes as Principal Medical Officer to the Secunderabad Brigades (two infantry and one cavalry), a second in a similar capacity to the Allahabad and Fyzabad Brigades—with headquarters at the former place—whilst the third becomes Deputy Principal Medical Officer at Army Headquarters. The four Sanitary Officers (three Command and 9th Division) are abolished, and in lieu thereof ten *Divisional* Sanitary Officers are to be appointed; these will be taken from the Royal Army Medical Corps. The four Staff Officers, Army Bearer Corps, also disappear—to be replaced by nine Divisional Mobilisation Store Officers; of these four will be selected from the Royal Army Medical Corps. One of the greatest gains under the new organisation will be, without doubt, the allocation of a Sanitary Officer to *each* Division; hitherto it has been a matter of extreme difficulty for one officer to deal—especially in the hot weather—with an entire Command owing to the distances to be traversed. Steps are also being taken to equip and considerably increase the number of brigade laboratories.

“The Government of India have just approved of revised rules in connection with specialist appointments in India. The number of appointments will be the same as heretofore, viz., 105, of which 55 will be allotted to the Royal Army Medical Corps and 50 to the Indian Medical Service in military employment. The specialist pay (Rs. 60 a month) is an allowance to officers below the rank of Lieutenant-Colonel for special sanitary, surgical, or medical work done for the State. It will not be a personal allowance, but will be granted only to the incumbents of certain specified appointments when *actually* in a position to perform the duties connected therewith. The following is a list of appointments:—

(a) Prevention of disease (including parasitology, bacteriology, and preventive inoculation)	40
(b) Dermatology (including the prophylaxis, treatment of, and instructional measures in connection with venereal diseases)	10
(c) Advanced operative surgery	20
(d) Ophthalmology	10
(e) Electrical science (including skiagraphy)	10
(f) Mental science	2
(g) Otology, laryngology and rhinology	3
(h) Midwifery and diseases of women and children	10
Total	105

“Selections for appointments and the distribution throughout the several divisions and brigades will be made under the orders of his Excellency the Commander-in-Chief, and notified in India Army Orders, the guiding principle, however, being that officers will be located in those stations where their services are likely to be of the greatest utility to the Army.”

QUEEN ALEXANDRA'S IMPERIAL MILITARY NURSING SERVICE.

The following ladies have received appointments as Staff Nurse: Miss E. M. Croisdale, Miss C. M. Hodson, Miss G. Hughes, Miss M. A. McCabe, Miss B. M. Oates, Miss G. M. Bennet.

Postings and Transfers.—Sisters: Miss A. A. Murphy, to Military Hospital, Canterbury, from Royal Victoria Hospital, Netley; Miss L. E. C. Steen, to the Queen Alexandra Military Hospital, Millbank, London, on return from Egypt; Miss M. Walker, to Military Hospital, Potchefstroom, S.A., from Military Hospital, Pretoria; Miss C. G. Stronach, to Royal Victoria Hospital, Netley, on return from Egypt; Miss S. B. Lanyon, to Military Hospital, Curragh, from Royal Herbert Hospital, Woolwich; Miss M. E. Harding, to Military Hospital, Cork, from Military Hospital, Curragh; Miss K. M. Hewetson, to Military Hospital, Gibraltar, from Royal Victoria Hospital, Netley. Staff Nurses: Miss M. M. A. McCreery, to Military Hospital, Curragh, from Royal Victoria Hospital, Netley; Miss E. L. Jackson, to Connaught Hospital, Aldershot, on appointment; Miss M. Antrobus, to Military Hospital, Cairo, on arrival from England; Miss M. Davis, to Military Hospital, Cairo, on arrival from England; Miss C. G. Lees, to Military Hospital, Alexandria, on arrival from England; Miss D. M. Smith, to Cambridge Hospital, Aldershot, from Military Hospital, Portsmouth; Miss R. Beamish, to Military Hospital, Portsmouth, from Cambridge Hospital, Aldershot; Miss M. H. Smyth, to Royal Victoria Hospital, Netley, from the Queen Alexandra Military Hospital, Millbank, London; Miss E. St. Quintin, to Royal Victoria Hospital, Netley, from Military Hospital, Devonport; Miss G. M. Bennet, to Military Hospital, Devonport, on appointment; Miss M. McBride, to Royal Herbert Hospital, Woolwich,

on appointment; Miss E. A. Rutherford, to the Queen Alexandra Military Hospital, Millbank, London, on appointment.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain Arthur L. Jones to be Surgeon-Major, dated June 19, 1907.

ARMY MEDICAL RESERVE.

The undermentioned Lieutenants are confirmed in that rank: Charles V. Nicoll, John F. Murphy, Samuel K. Adams, M.B., Murray R. Taylor, M.B.

ROYAL ARMY MEDICAL CORPS (MILITIA).

Thomas Price Thomas to be Lieutenant, dated June 18, 1907.

IMPERIAL YEOMANRY.

Royal North Devon (Hussars).—Supernumerary Surgeon-Lieutenant W. F. L. A. Holcroft, M.B., resigns his Commission, dated May 31, 1907.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Scottish Command: Glasgow Companies.—Lieutenant W. Bryce, M.D., to be Captain, dated June 1, 1907.

Eastern Command: Woolwich Companies.—Quartermaster and Honorary Lieutenant E. N. Hammond, resigns his Commission, dated May 28, 1907. Robert Corfe to be Lieutenant, dated June 1, 1907.

Scottish Command: Glasgow Companies.—Quartermaster G. S. Singer resigns his Commission, dated June 30, 1907.

South Yorkshire Bearer Company.—Lieutenant G. H. L. Hammerton to be Captain, dated April 10, 1907.

Black Watch Bearer Company.—Lieutenant A. E. Kidd to be Captain, dated June 12, 1907.

Liverpool Bearer Company.—Lieutenant S. H. House, M.B., to be Captain, dated June 8, 1907.

OTHER VOLUNTEER CORPS.

1st Newcastle-on-Tyne Royal Engineers (Volunteers).—Wilfred Ernest Alderson, M.D., to be Surgeon-Lieutenant, dated April 26, 1907.

3rd Volunteer Battalion, The Essex Regiment.—Francis James Warwick, M.B. (formerly Captain, Royal Army Medical Corps, Volunteers), to be Surgeon-Captain, dated March 20, 1907.

1st (Hallamshire) Volunteer Battalion, The York and Lancaster Regiment.—Surgeon-Lieutenant W. S. Kerr, M.B., to be Surgeon-Captain, dated May 7, 1907.

2nd (Renfrewshire) Volunteer Battalion, Princess Louise's (Argyll and Sutherland Highlanders).—Surgeon-Lieutenant J. C. Herbertson to be Surgeon-Captain, dated March 19, 1907.

1st Forfarshire Royal Garrison Artillery (Volunteers).—Lloyd Turton Price, M.B., to be Surgeon-Lieutenant, dated May 22, 1907.

1st Renfrew and Dumbarton Royal Garrison Artillery (Volunteers).—Francis William Squair, M.B., to be Surgeon-Lieutenant, dated May 17, 1907.

1st (Sheffield) Yorkshire (West Riding) Royal Engineers (Volunteers).—Surgeon-Lieutenant A. C. Turner to be Surgeon-Captain, dated May 7, 1907.

8th (Scottish) Volunteer Battalion, The King's (Liverpool Regiment).—David Moore Alexander to be Surgeon-Lieutenant, dated February 16, 1907.

5th Volunteer Battalion, The South Wales Borderers.—William Robert Williams to be Surgeon-Lieutenant, dated May 12, 1907.

East London (Tower Hamlets), Royal Engineers (Volunteers).—Surgeon-Lieutenant J. P. Stewart, M.D., resigns his Commission, dated May 28, 1907.

Edward Cauny Ryall, F.R.C.S.I., to be Surgeon-Lieutenant, dated May 28, 1907.

19th Middlesex (St. Giles' and St. George's, Bloomsbury) Volunteer Rifle Corps.—supernumerary Surgeon-Lieutenant W. G. Macfee to be Surgeon-Captain, remaining Supernumerary, dated June 4, 1907.

2nd Durham (Seaham) Royal Garrison Artillery (Volunteers).—Surgeon-Major David Todd, from the 1st Durham Royal Garrison Artillery (Volunteers), to be Surgeon-Major, dated May 29, 1907.

3rd Volunteer Battalion, The Prince Albert's (Somersetshire Light Infantry).—Surgeon-Lieutenant P. G. McReddie resigns his Commission, dated June 4, 1907.

2nd (Angus) Volunteer Battalion, The Black Watch (Royal Highlanders).—Super-numerary Surgeon-Lieutenant-Colonel J. K. Anderson, M.D. (Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, Black Watch Volunteer Infantry Brigade), is granted the honorary rank of Surgeon-Colonel, dated June 6, 1907.

2nd Volunteer Battalion, The Hampshire Regiment.—Herbert George Harris to be Surgeon-Lieutenant, dated June 1, 1907.

5th (Glasgow Highland) Volunteer Battalion, The Highland Light Infantry.—Alexander Macphail to be Surgeon-Lieutenant, dated June 14, 1907.

EXAMINATIONS.

THE following results of examinations are notified for general information :—

Passed in Military Law for the rank of Lieutenant-Colonel: Majors H. A. Bray, J. H. Rivers, E. M. Pilcher, D.S.O., M.B., H. J. M. Buist, D.S.O., M.B., and A. Pearse; Captain J. V. Forrest.

Passed in Technical Subjects for the rank of Lieutenant-Colonel: Majors J. D. Ferguson, D.S.O., H. J. M. Buist, D.S.O., M.B., and A. Pearse.

Passed in A.M.O.: Major F. J. Wade-Brown.

Passed in S.S.: Majors W. A. S. J. Graham (8) and C. W. H. Whitestone, M.B.

Passed in (h) i. for the rank of Captain: Lieutenants A. A. McNeight, M.B., W. Byam, C. P. Thomson, M.D., G. W. Heron, J. S. Pascoe, G. E. Cathcart, A. A. Meaden, T. H. Gibbon, M.D., C. H. Turner, R. B. Hole, M.B., H. Harding, M.B., J. A. Turnbull, M. D. Ahern, and S. C. Bowle.

Passed in (h) ii. and iii. for the rank of Captain: Captain M. C. Wetherell, M.D., and Lieutenants R. B. Hole, M.B., D. P. Johnstone, G. S. C. Hayes, P. T. C. Davy, M.B. (Spec. Cert.), and H. Stewart, M.B. (80 per cent.).

Passed in (d) ii. for the rank of Captain: Captain M. C. Wetherell, M.D. (75 per cent.), and Lieutenants R. B. Hole, M.B., D. P. Johnstone, G. S. C. Hayes (75 per cent.), P. C. T. Davy, M.B. (Spec. Cert.), and C. G. Browne.

MEMORANDUM.

THE Commands to which Officers proceeding to India have been allotted are as stated hereunder. Officers desirous of being posted to any particular Division may name any three Divisions in the Army to which they are detailed in order of priority of choice, and every effort will be made in India to meet their wishes.

The probable dates of embarkation given will be adhered to as far as Service exigencies permit.

Rank and Name	Command	Probable date of embarkation	Remarks
Lieut.-Col. H. J. R. Moberley	Southern ..	February 5	
„ T. Daly	Northern ..	September 4..	Byexchange with Lieut.-Col. S. F. Loughheed.
„ W. B. Thomson ..	„ ..	December 5	
„ H. H. Brown ..	„ ..	November 6	
„ Sir J. Fayer, Bart.	„ ..	October 18	
„ G. H. Barefoot ..	„ ..	September 20	
Major A. W. Bewley ..	„ ..	January 22	
„ W. A. S. J. Graham ..	Southern ..	„ 8	
„ A. Pearse	Northern ..	February 19	
„ N. Faichnie	„ ..	October 2 ..	Byexchange with Lieut.-Col. F. S. Heuston.
„ G. J. Buchanan ..	„ ..	December 18..	Byexchange with Lieut.-Col. R. H. Hall.
„ E. B. Steel	Southern ..	November 20	
Captain W. R. Clements	„ ..	„ 6	
„ G. B. Crisp	Northern ..	„ 20	
„ W. B. Winkfield ..	„ ..	December 18	
„ G. J. A. Ormsby ..	„ ..	February 19	

MEMORANDUM—continued.

Rank and Name	Command	Probable date of embarkation	Remarks
Captain L. Humphry ..	Southern ..	September 4 ..	By exchange with Capt. H. M. Nicholls.
" H. H. Norman ..	" ..	October 2	
Lieut. P. C. T. Davy ..	" ..	February 19	
" C. G. Browne ..	Northern ..	September 4	
" R. S. Smyth ..	" ..	" 20	
" H. Stewart ..	" ..	February 19	
" F. A. McCammon ..	Southern ..	January 8	
" G. de la Cour ..	Northern ..	" 22	
" W. Egan ..	" ..	October 2	
" R. G. H. Tate ..	" ..	February 5	
" A. Dawson ..	Southern ..	" 5	
" F. Forrest ..	Northern ..	November 6	
" A. S. Williams ..	" ..	January 22	
" V. C. Honeybourne ..	" ..	" 22	
" C. T. Edmunds ..	" ..	" 8	
" V. G. Johnson ..	" ..	" 8	
" C. R. M. Morris ..	" ..	December 18	
" R. E. U. Newman ..	" ..	" 18	
" E. M. W. Paine ..	Southern ..	" 5	
" F. D. G. Howell ..	Northern ..	" 5	
" P. Sampson ..	Southern ..	November 20	
" E. M. O'Neill ..	" ..	" 20	
" G. B. Edwards ..	" ..	" 6	
" J. W. L. Scott ..	" ..	October 18	
" W. C. Smales ..	" ..	" 18	
" A. H. Bond ..	" ..	September 20	
" G. H. Stevenson ..	Northern ..	November 6	
" T. T. H. Robinson ..	Will be notified later		
" D. de C. O'Grady ..	" "	"	
" L. G. Gibson ..	" "	"	
" P. S. Stewart ..	" "	"	
" T. W. O. Sexton ..	South Africa	February 1 ..	Instead of to India.
" E. J. Kavanagh ..	Malta ..	" 13 ..	
Major C. E. P. Fowler ..	Gibraltar ..	September 25	
" A. E. C. Keble ..	" ..	" 25	
Lieut. W. J. Weston ..	" ..	January 16	
" C. M. Drew ..	" ..	August 29	
" J. B. G. Mulligan ..	Malta ..	November 20	
Lieut.-Col. J. C. Culling ..	Bermuda ..	August 29	
Lieut. A. A. Sutcliff ..	Straits Settlements	October 31	
" R. G. Galgey ..	Jamaica ..	" 31	
Major C. A. Young ..	Mauritius ..	September 18	
" J. H. Campbell ..	" ..	" 18	
" Capt. C. W. Holden ..	North China	October 31	
Major S. Macdonald ..	South "	" 31	
Capt. S. de C. O'Grady ..	Egypt ..	January 16	
Lieut. A. G. Cummins ..	Ceylon ..	October 31	
" W. H. Gillatt ..	Crete ..	February 13	
Lieut.-Col. J. Maher ..	South Africa	" 1	
Major H. P. Johnson ..	" "	November 27	By exchange with Major S. H. Fairrie.
Lieut. A. S. Littlejohns ..	" "	September 18	
" W. H. Forsyth ..	" "	November 27	

The name of Lieutenant-Colonel H. E. R. James has been removed from the roster for service abroad under the provisions of Article 603 Pay Warrant.

Lieutenant R. G. Archibald has been selected for service under the Colonial Office.

COMMITTEE OF THE JOURNAL OF THE ROYAL ARMY MEDICAL CORPS AND LIBRARY OF THE ROYAL ARMY MEDICAL COLLEGE.

The following gentlemen have been appointed members of the above Committee for the current year:—

Surgeon-General Sir A. Keogh, K.C.B., M.D.
Surgeon-General W. J. Fawcett, C.B., M.B.
Major H. J. M. Buist, D.S.O., M.B.
Colonel D. Bruce, C.B., F.R.S., M.B.
Colonel H. E. R. James.
Lieutenant-Colonel A. M. Davies.
Lieutenant-Colonel W. B. Leishman, M.B.
Dr. J. R. Bradford, F.R.S.
Dr. M. S. Pembrey, M.D.
Lieutenant-Colonel A. B. Cottell.
Surgeon-Colonel A. Clark, V.D.
Lieutenant-Colonel Sir J. Clark, Bt., C.B.

REGISTER FOR INDIAN SERVANTS.

Few officers on going to India have not experienced the difficulty of getting good servants. The discomforts on arrival and of a long journey up country, unprovided with a bearer, or, what is worse, provided with a hastily selected man, taken haphazard from the crowd of indifferent or bad characters who congregate in Bombay, have fallen to the lot of most of us, whilst the period of trial and vexation until a proper staff of servants is secured is familiar to us all.

In our Corps, with regular annual reliefs, it should not be difficult to arrange for an interchange. Officers leaving India would then be able to provide places for the good and tried retainers they are relinquishing, and new arrivals would, by taking on these men, be spared many of the worries and troubles which now befall them. Further, good servants would not be lost to the Corps, and the prospects of continuous employment could not fail to have attraction for the better class of men.

With these ends in view, officers due home from India are requested to communicate to the Journal particulars of servants whom they can recommend, so that officers going out in relief may have an opportunity of securing these men. The particulars required are:—

- (1) Class of servant.
- (2) Whether for bachelor or married officer.
- (3) District or station to which he belongs.
- (4) Any special recommendations.

NOTE.—The date the officer leaves India should also be stated, and when and where the servant will be available.

Captain B. S. Bartlett, R.A.M.C., Norwich, recommends his former servant, Abdullah Khan, now available.

- (1) Bearer, or bearer-khitmahghar.
- (2) Bachelor or married officer.
- (3) Meerut, United Provinces.

(4) "He is a very honest, reliable man, speaks English (having been in Madras), is an equally good servant for bachelor or married man, a very good traveller and useful in camp. Will go anywhere." He was with Captain Bartlett for six years.

Address: Abdullah Khan, bearer; son of Yussuf Khan, Subahdar, Dragoon Bazaar, Meerut, U.P.

UNITED SERVICES MEDICAL SOCIETY.

THE first meeting of the Council of the newly-formed United Services Medical Society was held on May 30, 1907.

It was decided that meetings be held at the Royal Army Medical College at 8.30 p.m. on the second Thursday in each month, commencing on October 10, 1907; that the annual subscription be 5s., payable in advance; and that a notification of the formation of the Society, accompanied by an invitation to join, be sent to all medical officers on the active lists and to those on the retired lists whose addresses can be discovered. Should any medical officer on the active or retired list of the Navy, the British and Indian Armies, or the Auxiliary and Colonial Forces, not receive an invitation, the Council hope that, if desirous of joining the Society, he will communicate with one of the Honorary Secretaries, Fleet-Surgeon W. W. Pryn, R.N., "Tredown," 25, Idmiston Road, West Norwood, S.E., or Lieutenant-Colonel C. H. Melville, R.A.M.C., Royal United Service Institution, Whitehall, S.W.

THE NAVY AND ARMY MALE NURSING CO-OPERATION.

Patroness: HER MAJESTY THE QUEEN.

THE primary object of this scheme is to enable trained men of the Nursing Section of the Royal Army Medical Corps to find employment in civil nursing on leaving the Service, and to provide a reliable nursing Reserve for the country. The training now given to the orderly is of a high standard, and has placed him in a position to demand market value for his skilled labour. Owing to the want of a male nurses' organisation, trained orderlies are often now unable to find suitable employment on leaving the Service, their training and skill are wasted, and some of them drift into the ranks of unskilled labour or into those of the unemployed.

The system of male nursing in England at this moment is deplorably inefficient and unorganised. If the public were convinced that really reliable male nurses could be obtained through this Association, there would be no lack of employment for its members. Co-operations for female nurses have been for some years a magnificent success. The nurse has been able to earn her own fees, minus a small percentage, and it is on such lines as these that the Navy and Army Male Nursing Co-operation should be formulated. The sum of about £500 would be required to start such an organisation. The initial outlay would necessarily be heavy, but in a year's time it would be self-supporting. A sum of £100 has been promised if £400 more can be collected. The scheme has met with the cordial approval of the Medical Director-Generals of the Navy and Army and many other influential persons, among whom are:—

The President of the Royal College of Physicians,
The President of the Royal College of Surgeons,
The First Lord of the Admiralty, the Right Hon. Lord Tweedmouth,
The Right Hon. R. B. Haldane, Secretary of State for War,
Field Marshal the Right Hon. Earl Roberts and Lady Roberts, and
Sir William Church, Bart., K.C.B., M.D.,

who are giving their patronage to the undertaking.

"The inaugural meeting of the Navy and Army Male Nursing Association was held on Monday, June 10, at 10, Hill Street, Mayfair.

"The chair was taken by Sir Richard Biddulph Martin, who briefly introduced the object of the meeting to those present.

"Sir Frederick Treves was the first speaker, and he warmly supported the inauguration of the Association. He said that in his own experience he had known many cases which would have been better nursed by male rather than female nurses, and that it was not to our credit that there was this shortage of male nurses. He could say that American surgeons were amazed that operations of a certain type were not nursed by male nurses. He would allow that for mental, paralytic, and certain nervous cases, there was already a sufficient supply of good male nurses, but he was speaking now of

nursing generally, and for general nursing there was no doubt a deficiency. It might be objected that orderlies were not sufficiently trained to be good nurses, but he begged the meeting to remember that matters had been changed since the South African War, and Surgeon-General Sir Alfred Keogh would tell them of the existing training conditions. Before the war, orderlies were put to various sorts of work, some of which were very rough, but now that was all altered. If a man showed aptitude as a cook, he remained a cook all the time he was in the Army, and if he showed aptitude as a nurse he would serve as a nurse throughout his term of service. The male nurses had three years' training, and were therefore thoroughly qualified. They underwent military drill and were then placed in a military hospital, and there was in our military hospitals an enormous amount of nursing; the number of operations was extraordinary, and there was a great variety of diseases, and some tropical diseases and the like, which could seldom come within the experience of the civilian nurse. He could affirm that they were turned out as first-class nurses, who had also undergone the wholesome discipline of the British Army.

"The fact that the genesis of the Association was due to Miss McCaul should recommend it to the meeting, as she had so large a knowledge of the demands of nursing, and had experience of the Army orderly in South Africa. It was proposed to work the Association on the same lines as the Nurses' Co-operation; the services of all first-class orderlies would be acquired by the Association on their leaving the Army, and all the fees would be handed to the nurses, with the exception of a very small percentage to cover working expenses. The Association would supply a need, the existence of which was very nearly a disgrace to us; it would be a guarantee to men who worked well in the Army that they would be employed later as male nurses, *post-mortem* porters, laboratory and asylum and pathological institute attendants.

"Sir Frederick concluded by stating that he had mentioned the proposal to Her Majesty the Queen some eighteen months ago, and a day or two since had explained to her the present position, and she was graciously pleased to give her entire approval, and to consent to become Patroness of the Association.

"Inspector-General Herbert Ellis, Director-General of the Medical Department of the Navy, observed that there was no doubt that the medical profession would endorse the formation of such an Association, but he could not help saying to Miss McCaul that she would have to educate her public. He could assure them, however, that the training of the orderlies was excellent. They were recruited in the Navy between the ages of 18 and 21, and the type of man was very satisfactory. There was an education test, and they were then sent to Portsmouth or Plymouth under the tuition of the lady sisters at the hospitals, where they served six months as probationers, being taught the elements of physiology, anatomy, pharmacy, first aid, sick cookery, and Swedish drill. There was then an examination on subjects taught, and those who failed were got rid of, while the successful candidates remained in hospital eighteen months, and were then drafted on to men-of-war at home and abroad. In the Navy they were all long-service men; at the end of twelve years they could re-engage, if they liked, for ten years, and then retire on a pension. In the hospitals there were some 500 to 700 patients, so that there was every opportunity for nursing a variety of cases, and it must be remembered that the standard of work throughout their years of service was very high, and that they were the colleagues of him who was rightly called the 'handy man,' and the public might have every confidence in employing them after their retirement from the Service.

"Surgeon-General Sir Alfred Keogh, Director-General of the Army Medical Service, affirmed that the system of training the orderly was very different from that in existence before the South African War. There were now about 800 male nurses of most excellent character and conduct who would not be allowed to remain in the Corps if the slightest derogatory fact were adduced against them. He himself was not present that afternoon in the interest of the civil public, but rather in the interest of the Army and of the Army nurses. As things were at present, they had no means by which they could continue their training after leaving the Service, and as it was of the highest importance that the soldier should have the best possible nursing, it would be a great advantage if the Army nurse could keep himself in constant practice and ready for the emergency of war. It was desired to attract the best type of man, and he could assure them that many in the Medical Corps had the standard of education required before a non-commissioned officer could gain a commission; and, while the practical training of the nurses was in the hands of the sisters, the theoretical was equal to that of the first (if not the second) year's work of a medical student. They had further arranged examinations in conjunction with the Incorporated Society of Masseuses, and altogether

he could not but acknowledge as excellent the training which the Royal Army Medical Corps now received.

"Sir William Church, when called upon by the Chairman, remarked that he had come there rather as a listener than as a speaker, but he could assure the meeting that it would be an immense advantage if the reservist could keep himself actively employed in the pursuit of nursing, and so be thoroughly ready to nurse again when called on in time of war. Sir Frederick Treves had appealed to our selfishness by saying how much the general public would benefit by the services of male nurses; he could not help feeling that the greatest gain by the establishment of this Association would be to the soldier and the Army nurse himself.

"A resolution for the inauguration of the Association having been formally passed, Sir Richard Douglas Powell, President of the Royal College of Physicians, proposed a vote of thanks to Sir Richard and Lady Martin for their kindness in lending their house for the meeting that afternoon. They all knew Sir Richard's interest in philanthropic objects; but he could say that this was in no sense a charity, for they hoped the Association would be entirely self-supporting.

"Mr. Henry Morris, President of the Royal College of Surgeons, seconded the motion, and expressed his conviction that the greatest benefit would accrue to the male nurses themselves, and he was sure that openings could be found for them in civil cases, such as those requiring massage or much lifting. He also made the suggestion that if they increased their knowledge of language they would make excellent couriers and attendants on patients wishing to travel."—*The Nursing Mirror*, June 8, 1907.

The following is a leading article from the *Nursing Mirror*, June 15, 1907:—

"THE NURSING OUTLOOK.

"From magnanimity, all fears above;
From nobler recompense, above applause,
Which owes to man's short outlook all its charm."

"MALE NURSES AND NURSING.

"Miss McCaul is to be congratulated on the success of the meeting which she organised at 10, Hill Street, Mayfair, on the 3rd inst. There can be no doubt that in fact it often happens, in existing circumstances, that members of the medical profession require the services of skilled male nurses which they are unable to obtain. We believe the absence of a school for the instruction of male nurses in Great Britain is due to the fact that, where similar efforts have been attempted, they have not proved in practice a success. Some years ago there was a large school of the kind attached to the Bellevue Hospital, New York, in which a considerable number of male nurses were received for training. It is no part of our present purpose to analyse the causes which ultimately led to the closing of this school, but the fact no doubt militated against further attempts not only in the United States, but in this country. Seeing that the genesis of the Navy and Army Male Nursing Association, inaugurated on the 3rd inst., is due to Miss McCaul, she is entitled to be credited with commendable courage in this connection.

"Male nurses will no doubt mostly consist of men who have served in the Army or the Navy. There are two aspects, therefore, in which the question must be considered. First, the effect Miss McCaul's movement is likely to have upon the standard of male nursing in the two Services, and secondly, the advantages which may accrue from it to the public and the medical profession. As to the first, Sir Alfred Keogh, Director-General of the Army Medical Service, regarded it of paramount importance, for he stated he was present not in the interests of the civil public, but rather in the interests of the Army and of the Army nurses. As things stand at present the men had no means by which they could continue their training after leaving the Services. It was, however, of the highest importance that the soldier should have the best possible nursing, and it would be a great advantage if the Army nurse could keep himself in constant practice and ready for the emergency of war. It was desired to attract the best type of man, and many serving in the Medical Corps had the standard of education required before a non-commissioned officer could gain a commission. Sir William Church, too, insisted upon the immense advantage the Association should confer, by enabling the reservist to keep himself actively employed in the pursuit of nursing, and so be thoroughly ready to undertake to nurse when called upon in time of war.

Sir William Church felt that the greatest gain to be expected from Miss McCaul's Association would be to the soldier and the Army nurse.

"We have not failed to encourage the male nurse to keep himself efficient, and to find constant employment in civil life. At the time of the South African war it was no doubt true that the orderlies were not sufficiently trained to be good nurses. We have, however, the authority of Sir Frederick Treves, Sir Alfred Keogh and Inspector-General Herbert Ellis, for the statement that, at the present time, male nurses were very carefully selected, and that those men who showed aptitude as a nurse now served in that capacity throughout their term of service. The male nurses in the Army have three years' training, and the field of instruction in military hospitals, owing to the great amount of nursing to be done, the number of operations performed, and the great variety of diseases treated, is exceptionally wide. There are now about eight hundred male nurses of most excellent character and conduct serving in the Medical Corps, and no effort is spared to select the best type of men for training. The practical work of the male nurses is in the hands of the sisters, and Sir Alfred Keogh declares the theoretical instruction to be now equal to that given in the first and possibly in the second years' work of a medical student. In the Navy they have to pass an education test, and to serve six months as probationers, afterwards passing an examination in the elements of physiology, anatomy, pharmacy, first aid, sick cookery and Swedish drill. Subsequently, the male nurse is trained in the wards of a naval hospital for eighteen months, and is then drafted on to a man-of-war at home or abroad. Inspector-General Ellis insisted that the standard of work of the male naval nurses throughout their years of service was very high. We feel the profession and the public may rest satisfied that any male nurse supplied by the new Association will be found of good character and high efficiency.

"The Navy and Army Male Nurses' Association, which has been organised on the lines of the Nurses' Co-operation, will start under the most favourable auspices, for Her Majesty the Queen is its patroness. All first-class orderlies will be accepted as members of the Association on their leaving the Army, and all fees which the male nurses may earn, less a small percentage to cover working expenses, will be paid to the members who earn them. The Association is calculated to supply a felt want. Not the least of its services should be to afford a guarantee to male nurses, who have worked well in the Army or Navy, that they will readily secure remunerative employment, through its agency, on leaving either Service."

ROYAL ARMY MEDICAL COLLEGE.

EXAMINATION OF CAPTAINS FOR PROMOTION TO MAJOR.

State Medicine. (Special Subject.)—(Written Examination.) Thursday, June 27, 1907. From 2.30 to 5.30 p.m.

(1) Give your views as to the usefulness or injuriousness of alcohol, considered dietetically (not medicinally): (a) For the population generally; (b) for the soldier. Are there any circumstances in which you would recommend its issue?

(2) You are probably acquainted with both the water system of excreta removal and the dry earth, or pail system, as applied to barracks. Contrast the advantages and disadvantages of the two, and mention the details to which you would give special attention in the two cases.

(3) State what you know as to the causation and mode of spread of epidemic cerebro-spinal meningitis. What preventive measures would you adopt?

(4) How would you proceed to investigate the causes of an outbreak of enteric fever among the troops at an Indian or tropical station? State fully the lines of enquiry you would take up, and any laboratory methods of research which you would adopt.

(5) Describe briefly the organisms implicated in outbreaks of food poisoning, giving their cultural characteristics. How would you proceed to isolate an organism suspected to be the causative agent.

Practical State Medicine. (Special Subject.)—First day. Thursday, June 27, 1907. From 10 am to 1 p.m.

Examine and report on the water sample before you.

Practical State Medicine. (Special Subject.)—Second Day. Friday, June 28, 1907. From 10 a.m. to 1 p.m.

(1) Flask A contains 5 grammes of fat from a specimen of butter sent for analysis. Give an opinion as to whether it is a genuine butter or otherwise.

(2) Examine and report on the quality of the milk sample.

(3) In the porcelain dish is a solution of soft soap. Standardise it for Clark's test, so that 1 cc. shall be equivalent to one milligramme of calcium carbonate.

A solution of barium nitrate is available, made by dissolving 0.3 gramme in one litre of distilled water.

Bacteriology. (Special Subject.)—(Written Examination.) Thursday, June 27, 1907. From 2.30 to 5.30 p.m.

(1) Describe the more recent methods introduced for differentiating between the *Bacillus coli*, the *B. typhosus*, the *B. dysenteriae* and their congeners. How may the fermentations produced in sugars be taken advantage of in investigating these organisms?

(2) Discuss the etiology of relapsing fever and of tick fever in man, and detail recent work on the parasites associated with these diseases.

(3) How would you treat a horse so as to produce an anti-diphtheritic serum, and how would you standardise the serum when obtained?

(4) You are in a tropical station when an epidemic of pneumonia occurs. State the lines of investigation you would pursue with a view to determining the cause. What known organisms would you think of in this connection?

Bacteriology. (Special Subject.)—(Practical Examination.) First day. Wednesday, June 26, 1907. From 10 a.m. to 1 p.m.

(1) Determine the phagocytic index of the blood serum "A" towards *B. typhosus*, using for the estimation your own corpuscles, and, as a control blood, the serum marked "B." The operation need only be carried as far as the preparation of the films, which you will mark and set aside for staining and counting to-morrow.

Young agar cultures of *B. typhosus* will be provided.

(2) Make plate cultures on agar from the material contained in the tube marked with your examination number and set them aside for incubation, marked as directed.

(3) Stain the unfixed film so as to demonstrate any protozoal organisms which may be present in it, and leave your specimen in focus under your oil-immersion lens.

Bacteriology. (Special Subject.)—(Practical Examination.) Second day. Thursday, June 27, 1907. From 10 a.m. to 1 p.m.

(1) Complete the estimation of the phagocytic index which you commenced yesterday, and write a short account of the various steps in the process and the result at which you have arrived. Leave one of your stained films beside your microscope.

(2) Examine the plate cultures which you prepared yesterday, and record in your paper the results of your examination. Leave two stained films of each of the micro-organisms you may have isolated beside your microscope, properly labelled.

(3) Oral examination.

Dermatology and Venereal Diseases. (Special Subject.)—Wednesday, June 26, 1907. Commencing 4 p.m.

(1) Describe the forms of disease included under the term "syccosis." Discuss their etiology, differential diagnosis and treatment, giving prescriptions in full.

(2) Enumerate and describe the different conditions which give rise to patchy loss of hair on the scalp.

(3) Name the various skin diseases occurring on the trunk which are characterised by circinate lesions.

(4) Classify the various types of syphilitic eruption generally included under the term "secondary." Give the dates after the primary infection at which they usually appear; and describe the morbid phenomena—other than cutaneous—which may occur during the same period.

Midwifery and Gynaecology. (Special Subject.)—Thursday, June 27, 1907. From 10.30 a.m. to 1.30 p.m.

(1) What difficulties may be met with in a case of presentation of the breech, and how would you deal with them?

(2) Give the pathology, clinical course, and differential diagnosis of a case of hydatidiform mole.

(3) Mention the causes of rupture of the uterus, and give the treatment.

(4) Give the varieties and treatment of asphyxia neonatorum.

(5) What tumours of the internal generative organs are associated with free fluid in the abdomen? Discuss the differential diagnosis.

(6) Describe the operation of total abdominal hysterectomy for fibromyoma.

Ophthalmology. (Special Subject.)—(Written.) Thursday, June 27, 1907. From 2 to 5 p.m.

(1) What are the causes of acute increase of tension in the eye? Discuss the pathology and treatment.

(2) What are the signs of detachment of the retina? State the reasons which would make you decide whether the detachment was caused by a neoplasm or not.

(3) Describe the causes, course, complications, and treatment of a case of interstitial keratitis.

(4) Give an account of the affections of the eye associated with diabetes.

(5) How would you deal with a case of ophthalmia neonatorum?

EXAMINATION OF LIEUTENANTS, ROYAL ARMY MEDICAL CORPS AND INDIAN MEDICAL SERVICE, AT THE CLOSE OF THE FIRST SESSION, 1907.

Hygiene.—(Written.) Tuesday, June 25, 1907. From 2.30 to 5.30 p.m.

(1) Give a short account of the arrangements at present existing for the feeding of the British soldier in barracks at Home stations. State as fully as you can what his dietary consists of, and give your opinion as to its sufficiency or otherwise.

(2) If placed in medical charge of a body of troops on manoeuvres or in camp, what would be your course of action in (a) selecting a water supply, and (b) safeguarding it when selected?

(3) What are the principal dangers to health (apart from the specific infectious fevers and malaria) encountered by Europeans in a tropical climate? Mention what preventive measures you would take to avoid these dangers.

(4) Discuss briefly the causation of Malta fever. Describe fully what preventive measures you would adopt.

(5) Define the terms "Empirical solution" and "Decinormal solution." Give an example of each. Describe briefly the method of bringing a culture medium to the reaction most suitable for the growth of laboratory cultures.

Practical Hygiene.—Wednesday, June 26, 1907. From 10 a.m. to 1 p.m.

(1) In the water sample before you, make a quantitative estimation of the nitrogen due to nitrates, and return the result as centigrammes per litre and grains per gallon.

The standard solution has been made by dissolving 0.0939 gramme of potassium nitrate in one litre of distilled water.

(2) Estimate the total and fixed hardness in the same sample, and return the result as parts per 100,000 and grains per gallon of calcium carbonate.

The soap solution is of such a strength that 1 cc. is equivalent to 1 milligramme of calcium carbonate.

(3) Estimate the carbon dioxide contained in the air of the jar before you as volumes per 1,000 volumes of air, corrected to standard conditions.

The oxalic acid solution has been made by dissolving 3 grammes in 1 litre of distilled water.

Capacity of jar, 3,060 cc.

Temperature, 15° C. Pressure, 750 milligrammes Hg.

Pathology.—(Written Examination.) Saturday, June 29, 1907. From 10 a.m. to 1 p.m.

(1) Describe the abnormal types of leucocytes and red blood corpuscles which may be found in the peripheral blood in disease, mentioning in each case the particular diseases with which they are associated.

(2) What are the chief morphological and cultural characteristics of the *Micrococcus melitensis*? Discuss the probable mode of infection in Malta fever.

(3) Describe the structure and the mode of multiplication of a trypanosome, and discuss the relationship of the *Trypanosoma gambiense* to sleeping sickness.

(4) Upon what morphological points would you rely for the differential diagnosis of the parasites of benign tertian and quartan malaria?

Pathology.—(Practical Examination.) Friday, June 28, 1907. From 10 a.m. to 1 p.m.

(1) Examine the culture with which you are provided, and write a short description of the results of your examination, giving your opinion as to the purity of the culture.

Leave two stained specimens (one of them a Gram preparation) beside your microscope labelled with your examination number and the number of the culture.

(2) Mount and stain the paraffin section so as to demonstrate the presence of any "acid-fast" bacteria which it may contain.

Label your slide as directed, and leave it beside your microscope.

(3) Prepare and stain a film of your own blood, by any method you prefer, and leave a large mononuclear leucocyte in focus under your oil-immersion lens.

(4) Examine the specimens exhibited under the microscope, and record in your paper your opinion as to their nature, quoting, in each instance, the number of the specimen.

Military Medical Administration.—Thursday, June 27, 1907. From 2.30 to 5 p.m.

(1) Of what forces does the Army consist?

(2) Under what code of law, and by what persons, is the Army governed?

(3) What responsibilities has a medical officer in charge of a hospital in respect of the patients therein?

(4) Describe the process of physical examination of a recruit for the Army. What are absolute disqualifications from the medical point of view, and in what respects may some latitude be given?

(5) What is the object of the "staff," and of what officers does the staff of a General Officer Commanding-in-Chief of a Command consist?

Military Surgery.—Friday, June 28, 1907. From 2.30 to 5.30 p.m.

(1) What mechanical conditions determine the amount of damage done by a projectile striking the body? (10 marks.)

(2) Explain the causes of secondary hæmorrhage in gunshot wounds. Give the treatment you would adopt in a case of secondary hæmorrhage, and your reasons for deciding on it. (30 marks.)

(3) Describe the various injuries inflicted by the small-bore bullet on the shaft of the femur. Give briefly the treatment of a gunshot fracture of the femur, on the field, during transport, and at a fixed hospital. (30 marks.)

(4) Describe the lesions met with in gunshot wounds of the neck, giving the symptoms of each and a brief outline of the treatment.

(N.B.—Injuries to the spinal column are not included in this question.) (30 marks.)

Tropical Medicine.—Wednesday, June 26, 1907. From 2.30 till 5.30 p.m.

(1) Describe the symptoms and clinical course of a case of kala azar.

(2) Discuss the fevers caused by forms of *Spirochæta* with regard to their symptoms, clinical features and results.

(3) Give an account of the factors affecting the distribution and prevalence of malarial fevers.

(4) Discuss the occurrence of intestinal ulceration in various forms of tropical disease.

(5) What are the causes of anæmia in residents in the tropics, and how would you attempt to differentiate between these causes?

N.B.—The first three questions and either the fourth or fifth to be answered, but not both.

THE LATE LIEUTENANT-COLONEL C. R. BARTLETT, R.A.M.C.

THE officers of the Corps serving at Sierra Leone propose to place in the Cathedral at Freetown a memorial to the late Lieutenant-Colonel Bartlett, R.A.M.C., who died there last December, during a tour of service on the Coast.

It is thought that other officers and friends might like to contribute towards this memorial.

Remittances should be made payable to the Manager, The Bank of British West Africa, Ltd., Freetown, Sierra Leone, who has kindly undertaken to receive any subscriptions towards the fund for this purpose.

ARMY MEDICAL OFFICERS' BENEVOLENT SOCIETY.

PROCEEDINGS of a Committee Meeting held at the War Office on Friday, July 12, 1907.

Present.

Surgeon-General Sir Charles Cuffe, K.C.B., Vice-President, in the Chair.
Colonel T. Ligertwood, C.B.
Colonel C. Seymour.
Colonel H. E. R. James.
Colonel A. T. Sloggett, C.M.G.
Lieutenant-Colonel A. B. Cottell.
Lieutenant-Colonel A. M. Davies.
Lieutenant-Colonel W. G. Macpherson, C.M.G.
Lieutenant-Colonel J. Martin.

A letter of regret for non-attendance was received from Colonel Lane Notter.

(1) The Minutes of the last Committee Meeting were read and confirmed.

(2) With reference to Minute 7 of the last meeting, it was noted that although the replies from the existing Trustees were favourable, it was found to be impracticable to appoint permanent Trustees to the Fund, so the question was postponed *sine die*.

(3) The Committee considered applications for assistance from the following, and made grants as noted :—

Orphan daughter of J. A. S., no grant.
Orphan daughter of J. O., £25.
Orphan daughter of W. L. H., no grant.
Orphan daughter of H. T. C., £25.
Orphan daughter of H. M., no grant.

F. W. H. DAVIE HARRIS, *Lieutenant-Colonel,*
St. George's Barracks, W.C. *Secretary.*

ROYAL ARMY MEDICAL CORPS FUND.

THE Thirtieth Meeting of the Committee was held at the War Office on Friday, July 12, 1907, at 11.30 a.m.

Present.

Surgeon-General Sir Thomas Gallwey, K.C.M.G., in the chair.
Surgeon-General William Fawcett, C.B.
Surgeon-General Sir Charles Cuffe, K.C.B.
Colonel A. T. Sloggett, C.M.G.
Colonel Sir James Clark, Bart., C.B.
Colonel H. E. R. James.
Lieutenant-Colonel E. M. Wilson C.B., C.M.G., D.S.O.
Lieutenant-Colonel A. B. Cottell.

(1) The Minutes of the previous Meeting were read and confirmed.

(2) It was noted that the following Officers have been appointed local *Honorary Secretaries*: Major E. C. Freeman, Jamaica; Major C. E. Pollock, Malta; Major E. McK. Williams, Singapore.

It was proposed by Surgeon-General Fawcett, and seconded by Colonel Sloggett, and carried: "That a sub-Committee be appointed to draw up a set of rules for the guidance of local *Honorary Secretaries*." The sub-Committee to consist of Colonel Sloggett, Colonel James and the Secretary.

(3) It was noted that the following sums have been paid out of the Memorial Fund for Portraits of:—

			£	s.	d.
Sir William Taylor, K.C.B.	..	..	63	0	0
Sir Alfred Keogh, K.C.B.	..	..	83	0	0
Sir T. B. Gibson, K.C.B.	..	..	75	0	0
John Hunter..	..	..	31	10	0

(4) It was noted that the following sums have been received for the General Relief Fund:—

			£	s.	d.
Aldershot, No. 2 Company	..	..	5	0	0
Dublin „ 14 „	..	..	5	0	0
Cork „ 16 „	..	..	7	11	6
Gibraltar „ 24 „	..	..	5	0	0
Malta „ 30 „	..	..	5	0	0
Netley „ .. ..	..	..	25	0	0
Detachment, Gosport	..	..	9	6	2
Major H. S. Peeke	..	..	0	10	0

(5) It was noted that the Widows' and Orphans' Fund has now been absorbed into the General Relief Fund. It was resolved on the proposal of Lieutenant-Colonel Wilson, seconded by Surgeon-General Fawcett: "That the Secretary should draw up a report showing the income and expenditure of the Widows' and Orphans' and the General Relief Funds since their formation to the present time."

(6) With reference to Minute 7 of the last Meeting the Secretary informed the Committee that the General Relief Forms have been drawn up, printed and circulated, and are now in use.

(7) On the proposal of Colonel Sloggett, seconded by Colonel James, it was resolved that the following resolution should be sent to the Officer in Charge of Records for favour of publication in Corps Orders, so that it might be generally known throughout the Corps.

UNION JACK CLUB.

"It is desirable that it should be generally known that all warrant officers, non-commissioned officers and men of the Corps, whether stationed at home or abroad, are members of the Club, the subscription of twenty four guineas being paid annually out of the General Relief Fund."

(8) In reply to a question asked at the last Meeting, the Secretary stated that forty-seven ex-Royal Army Medical Corps men were now employed in the Corps of Commissionaires.

(9) The half-yearly accounts to June 30 having been audited were passed, and are appended to these proceedings.

It was proposed by Sir Charles Cuffe and seconded by Sir James Clark, that in future the half-yearly accounts shall be circulated to the Committee at least ten days before the Committee Meeting—carried.

(10) The accounts of the Aldershot Sub-Committee for the quarter ending June 30, were approved as follows:—

Band Fund.—The sum of £90 was voted for this quarter's expenses. The accounts for last quarter are appended to these Minutes.

General Relief Fund.—The sum of £90 was voted for this quarter's expenses. The accounts for last quarter are appended to these Minutes.

(11) A letter was read from the Secretary of the Advisory Board, stating that the Board had passed the following:—

"To approach Memorial Fund on general question of a subscription of not more than £200 to a Pathology Prize to the late Lieutenant Tulloch; at the same time, since it is most desirable that this prize should be open to both Services, that Surgeon-General Branfoot should take steps to ascertain whether a certain sum, say £150, could be raised in the Indian Medical Service for the same purpose. The Memorial Fund to be then asked to give an equivalent amount, so that the prize may be endowed equally by both Services." After some discussion it was decided to postpone the subject to the next Meeting.

F. W. H. DAVIE HARRIS, *Lieutenant-Colonel,*
Secretary.

St. George's Barracks, W.C.

Proceedings of a Special Meeting held at the War Office on Friday, July 12, 1907, in accordance with the resolutions passed at the last Annual General Meeting.

Present.

Surgeon-General Sir Thomas Gallwey, K.C.M.G., in the Chair.
Colonel A. T. Sloggett, C.M.G.
Colonel Sir James Clark, Bart., C.B.
Colonel H. E. R. James.
Surgeon-General Sir Charles Cuffe, K.C.B.
Lieutenant-Colonel A. M. Wilson, C.B., C.M.G., D.S.O.
Lieutenant-Colonel A. B. Cottell.
Lieutenant-Colonel H. O. Trevor, Aldershot.
Captain E. W. W. Cochrane, Aldershot.
Major F. A. Symons, London.
Major T. V. Forrest, Eastern Command.
Major E. W. H. Whitestone, Eastern Command.
Major R. J. Copeland, Southern Command.
Captain H. A. Bransbury, Southern Command.

The Chairman stated that this Meeting, consisting of seven members of the Royal Army Medical Corps Fund Committee and seven subscribers who were not on the Committee, was called with a view of deciding:—

- (1) Whether there should be one universal subscription for all ranks.
- (2) How the subscriptions should be allotted.
- (3) To consider and report to the next Annual General Meeting the advisability of combining the Corps and Journal subscriptions.

With regard to the first two points the Corps Fund Committee had power to act on whatever decision this Special Committee came to.

It was first discussed as to whether it was judicious to have three separate Funds, viz., Dinner, Band and Memorial, and whether, if there was one consolidated Fund, the money would not go further. Some opinions were expressed as to the unpopularity of the Memorial Fund. Sir James Clark proposed, and Lieutenant-Colonel Cottell seconded, the following resolution, which was carried unanimously:—

“That the money subscribed to the Corps Fund shall be administered by the Committee as in their judgement may seem best.”

Colonel Sloggett proposed, and Colonel Wilson seconded: “That there shall be one universal subscription of £1 for all ranks.” To this Colonel James proposed an amendment: “That the subscription shall be *pro rata* according to rank.” On being put to the vote the amendment was lost and the resolution carried.

It was proposed by Sir Charles Cuffe, and seconded by Lieutenant-Colonel Trevor: “That the Journal shall not be included in the same subscription as the Corps Fund.” Carried unanimously.

F. W. H. DAVIE HARRIS, *Lieutenant-Colonel,*
Secretary.

St. George's Barracks, W.C.

By the above decisions the Corps Fund Committee will pay the expenses of the Band, Dinner and Memorials as occasion arises. There will, in future, be no special Band subscription, all officers' subscriptions being £1 only. The Secretary will therefore instruct the Bankers to receive that amount only from the officers' agents, thereby cancelling the New Order Form with the *pro rata* subscription issued last year.

ROYAL ARMY MEDICAL CORPS FUND ACCOUNT FOR HALF-YEAR ENDED JUNE 30, 1907.

BAND FUND.

RECEIPTS.		DISBURSEMENTS.	
	£ s. d.		£ s. d.
Balance, December 30, 1906	.. .. 0 10 3	To Aldershot Band Committee	.. .. 155 0 0
From Share of Subscriptions	.. .. 252 0 0	Share of Working Expenses	.. .. 8 18 4
" Special Subscriptions	.. .. 146 15 6	Balance	.. .. 235 7 5
	<u>£399 5 9</u>		<u>£399 5 9</u>

DINNER FUND.

RECEIPTS.		DISBURSEMENTS.	
	£ s. d.		£ s. d.
Balance, December 31, 1906	.. .. 111 17 10	Dinner Account for 1907	.. .. 241 2 5
Subscriptions	.. .. 252 0 0	Share of Working Expenses	.. .. 8 18 4
Special Subscriptions	.. .. 4 16 0	Balance in hand, June 30, 1907	.. .. 118 13 1
	<u>£368 13 10</u>		<u>£368 13 10</u>

MEMORIAL FUND.

RECEIPTS.		£	s.	d.	DISBURSEMENTS.		£	s.	d.
Balance Credit, December 30, 1906—					Portraits—Colonel Reynolds, V.C.		..	..	15 15 0
On Deposit	..	..	£550	0 0	" Sir William Taylor		..	..	63 0 0
Current Account	..	..	365	9 9	" Sir Alfred Keogh		..	..	83 0 0
				915 9 9	" Sir T. B. Gibson		..	..	75 0 0
From Subscriptions	..	..	..	510 9 6	" J. Hunter		..	..	31 10 0
" Interest on Deposit	..	..	..	9 10 8	Photos of V.C. Portraits, &c.		..	..	10 4 7
					Framing Portraits and Photos, &c.		..	..	27 1 11
					Share of Working Expenses		..	..	17 16 11
					Balance Credit, June 30—				
					Current Account		..	..	£162 1 6
					Deposit Account		..	..	950 0 0
									1,112 1 6
									£1,435 9 11

COMPASSIONATE FUND (CHARITABLE SCHOOLS).

RECEIPTS.		£	s.	d.	DISBURSEMENTS.		£	s.	d.
Balance in hand, January 1—					Northants Orphanage, for two Children..		..	..	16 0 0
Current Account	..	..	23	5 6	Royal Soldiers' Daughters' Home, for three Children..		..	..	38 0 0
Deposit Account	..	..	1,200	0 2	St. Vincent de Paul's Male Orphanage, for two Children		..	..	17 0 0
Interest on Deposit	..	..	..	14 1 1	Gordon Boys' Orphanage, for one Child		..	..	8 0 0
					St. Frances' Home, for one Child..		..	..	20 0 0
					Travelling Expenses, for one Child		..	..	1 10 5
					Balance, Current Account		..	..	£86 16 2
					Deposit Account		..	..	1,050 0 2
									1,136 16 4
									£1,237 6 9

COMPASSIONATE FUND (WIDOWS' AND ORPHANS').

RECEIPTS.		£ s. d.
Balance on December 31, 1906—		
Current Account	£26 11 1	
From Deposit	200 0 0	
	<hr/> 226 11 1 <hr/>	
	£226 11 1	

DISBURSEMENTS.		£ s. d.
Aldershot Sub-Committee, on January 21		80 0 0
" " April 20		90 0 0
Drummond Institution, Subscription ..		5 0 0
Balance, June 30, Current Account ..		51 11 1
		<hr/> £226 11 1 <hr/>

COMPASSIONATE FUND—GENERAL RELIEF.

RECEIPTS.		£	s.	d.
Balance, December 30, 1906—				
Current Account	..	£65	14	10
Deposit	..	£1,100	0	0
Subscriptions—		<u>1,165 14 10</u>		
No. 1 } Company, R.A.M.C. ..	..	..	..	..
" 2 }	..	..	..	..
" 4 }	..	..	..	..
" 5 }	..	..	..	..
" 6	..	..	..	..
" 7	..	..	..	..
" 11	..	..	..	..
" 12	..	..	..	..
" 14	..	..	..	..
" 15	..	..	..	..
" 16	..	..	..	..
" 20	..	..	..	..
" 23	..	..	..	..
" 24	..	..	..	..
" 25	..	..	..	..
" 28	..	..	..	..
" 30	..	..	..	..
Detachment, Gosport				
" Tipperary	..	..	..	..
" Harrismith	..	..	..	..
Subscriptions from Officers	..	..	..	..
Interest on Deposit..	..	..	..	..
		<u>£1,342 12 9</u>		

GENERAL FUND APPROPRIATION.

RECEIPTS.			DISBURSEMENTS.		
		£ s. d.			£ s. d.
From Subscriptions ..	..	..	To refund of Subscriptions ..	..	.. 5 1 0
„ Special ditto for Band ..	..	.. 1,023 14 0	„ Advertisement ..	..	.. 1 1 0
„ Petty Cash ..	..	.. 142 7 0	„ Shorthand Writer ..	..	.. 1 10 0
			„ Office Furniture ..	..	.. 10 0 0
			„ Auditor ..	..	.. 3 3 0
			„ Secretary's Salary ..	..	.. 9 7 6
			„ Printing ..	..	.. 1 0 8
			„ Postage ..	..	.. 1 15 10
			„ Stationery ..	..	.. 2 18 8
			„ Cheque Book, &c... ..	..	.. 0 5 10
					<hr/>
					£36 3 6
			To Memorial Fund ..	..	.. 492 12 8
			„ Band Fund ..	..	.. 389 17 2
			„ Dinner Fund ..	..	.. 247 17 8
					<hr/>
					£1,166 11 0

BALANCE SHEET, JUNE 6, 1907.

LIABILITIES.		ASSETS.	
	£ s. d.		£ s. d.
To Band Fund	235 7 5	By Cash at Bankers, December 30, 1906..	£592 19 3
" Dinner Fund	118 13 1	" Petty Cash	0 10 0
" Memorial Fund.. .. .	1,112 1 6	" Total Receipts	1,716 18 0
" Widows' and Orphans' Fund	51 11 1	" Total Expenditure	2,310 7 3
" General Relief Fund	1,256 11 4	" Balance at Bankers, June 30, 1907	886 0 7
" Charitable Schools' Fund	1,196 16 4	" Less outstanding cheque	75 0 0
			811 0 7
		By Deposits—	
		Charitable Schools	1,050 0 2
		General Relief Fund	1,100 0 0
		Memorial Fund	950 0 0
			£3,911 0 9

These accounts have been examined and found correct.

Signed A. T. SLOGGETT, Colonel } Auditors.
H. E. R. JAMES, Colonel }

ROYAL ARMY MEDICAL CORPS BAND FUND.

BALANCE SHEET FOR QUARTER ENDED JUNE 30, 1907.

RECEIPTS.			EXPENDITURE.		
Date. 1907.		£ s. d.	Date. 1907.		£ s. d.
April 15.	Balance Credit from last quarter	17 9 1	April 19.	Hon. Sec., Aldershot Military Tournament, Music	0 14 0
" 5, 16.	Officers' Subscriptions, R.A.M.C. Mess, Aldershot, March	8 17 6	" 20.	Bandmaster's Salary, April	10 0 0
" 22.	Fees for Engagements, April.. ..	4 12 6	" "	Band Pay, April	12 15 0
May 14.	Secretary, R.A.M.C. Fund, Quarterly Grant	75 0 0	" "	Band Fees for Engagements, April	4 12 6
	Officers' Subscriptions, R.A.M.C. Mess, Aldershot, April	8 17 6	" "	Covers for Violins	0 11 10
June 4.	Officers' Subscriptions, R.A.M.C. Mess, Aldershot, May	5 0 0	May 30.	Bandmaster's Salary, May	10 0 0
" 13, 24 & 29.	Fees and Expenses for Engagements, June	13 17 1	" "	Band Pay, May.. ..	13 3 6
May and June.	60 Officers' separate Subscriptions to Band Fund, at 5s.	15 0 0	June 27.	*Fees and Expenses for Engagements, May.. ..	10 7 6
			" "	Hawkes and Co., Music and Repairs	11 11 9
			" "	Boosey and Co., New Instruments	24 6 0
			" "	Gale and Polden, Printing	1 0 0
			" "	Postage, for Half-year.. ..	0 4 0
			" "	Carriage on Instruments	0 1 2
			" "	Bandmaster's Salary, June	10 0 0
			" "	Band Pay, June	12 5 0
			" "	Fees and Expenses for Engagements, June	13 17 1
			Balance at Bank .. ..	.. ..	13 4 4
	Total	£148 13 8		Total	£148 13 8

* Due from R.A.M. College Mess.

Aldershot,
July 5, 1907.

E. T. F. BIRRELL, *Captain,*
Band President, R.A.M.C.

ROYAL ARMY MEDICAL CORPS COMPASSIONATE (WIDOWS' AND ORPHANS') FUND.

BALANCE SHEET FOR THE QUARTER ENDED JUNE 30, 1907.

RECEIPTS.			EXPENDITURE.		
Date.	From whom received.	£ s. d.	Date.	To whom paid.	£ s. d.
1907.			1907.	On what account.	
April 22.	Balance Credit last Quarter ..	24 9 1	April 1.	Various ..	Monthly Disbursements
	Secretary, R.A.M.C. Fund ..	90 0 0	to	to 19 Widows..	..
			June 30.		76 7 0
			May 10.	S.M.O., Jamaica	Mrs. Sykes ..
			June 30.	S.-Sergt. H. Cassell	Clerk ..
				Postage ..	..
				Balance at Bank, transferred to General	..
				Relief Fund ..	..
					27 9 7
				Total ..	£114 9 1

Account closed.

Audited and found correct.

(Signed) E. T. F. BIRRELL, Captain, Hon. Secretary.

Aldershot,
July 5, 1907.

ROYAL ARMY MEDICAL CORPS COMPASSIONATE FUND—GENERAL RELIEF FUND.

BALANCE SHEET FOR THE QUARTER ENDED JUNE 30, 1907.

RECEIPTS.			EXPENDITURE.		
Date. 1907.	From whom received.	On what account.	Date. 1907.	T. to whom paid.	On what account.
April 17	Balance Credit last Quarter	.. .. 4 6 11	April 1	Various	Disbursements to 4 cases requiring monthly relief ..
"	Staff-Sergt. Carnell	Part refund of grant to wife	June 30		
June 22	Sec., R.A.M.C. Fund	Grant .. 25 0 0	April 8	Lieut.-Colonel White, Tralee ..	Mrs. Sowden ..
June 30	Widows' and Orphans' Fund	Transferred .. 27 9 7	" 13	Mr. Trydell ..	Grant ..
			" 24	Mr. Baverstock ..	" ..
			May 1	P.M.O., London Dist.	For urgent cases ..
			" 4	Mr. Diplock ..	Grant ..
			" 23	Mr. Andrews ..	" ..
			" 25	Pte. Garuham ..	" ..
			" 27	Bank ..	Cheque Book ..
			June 11	Mr. Webb ..	Grant ..
			" 14	Mrs. Moody ..	" ..
			" "	Mr. Selby ..	" ..
			" "	Mr. Lacey ..	" ..
			" "	Mr. Trydell ..	" ..
			" 30	Staff-Sergeant Cassell	Clerk ..
			" 26	P.M.O., London Dist.	For urgent cases ..
				Postage ..	" ..
				Balance at Bank ..	25 10 0
Total ..		£57 16 6	Total ..		£57 16 6

Aldershot,
July 5, 1907.

(Signed) E. T. F. BIRRELL, Captain,
Hon. Secretary.

ROYAL ARMY MEDICAL CORPS COMPASSIONATE FUND.

The following have received relief during the Quarter ended June 30, 1907 :—

WIDOWS' AND ORPHANS' FUND.

Name of recipient	Age	Number of children	If in receipt of pension. Amount	Monthly grant from Fund	Total amount received from Fund	Remarks
Mrs. K., London	40	2	None	£2	£20	Widow of a Private, who died at Mauritius. Cannot obtain employment.
Mrs. B., London	79	2	None	£1	£19	Widow of late Sergeant-Major No. 8. Too old to work, and two sons cannot afford more than 3s. weekly between them.
Mrs. K., London	68	..	None	£1 10s.	£61 10s.	Widow of a pensioner; is too old to work.
Mrs. S., London	59	..	None	£1 10s.	£70 10s.	Widow of a pensioner; cannot work owing to ill-health.
Mrs. S., London	38	3	None	15s.	£98 15s.	Widow of a Private, and has heart disease. Grant reduced from £1 from June 1, 1907.
Mrs. V., Netley	30	3	None	£1 10s.	£28 10s.	Widow of 10407 Sergt. Children all young and require attention of mother. The eldest is registered for a school. Grant discontinued; woman re-married.
Mrs. M., Dover	44	5	None	£1	£39	Widow of a Sgt.-Major. Four of the children are in homes, and one, aged 8, is with her.
Mrs. H., Dublin	59	2	None	£1 10s.	£34	Widow of 1721 Private. Unable to work; children both grown up and unable to assist her.
Mrs. G., Dublin	50	4	None	£1 10s.	£46 10s.	Widow of 2737 Private; youngest child 12 years. Receives various sums from two sons, sometimes nothing.
Mrs. I., Dublin	63	1	None	£1 10s.	£65	Widow of a pensioner; daughter is unable to keep her. Is unable to work.
Mrs. S., Dublin	62	..	None	£1 10s.	£83 10s.	Widow of a Corporal; decrepit and blind.
Mrs. R., Dublin	46	3	None	£2	£88	Widow of 2512, A. H. Corps; is in delicate health. Two eldest children have signs of tubercular disease.
Mrs. G., Dulwich	39	6	None	£1 10s.	£31 10s.	Widow of a Corporal. The two eldest assist her. The remainder are under 8 years.
Mrs. C., Norwich	41	2	None	£2	£97	Widow of a Private, and suffers from rheumatism. One child is in a school; girl, aged 10, is home, and is delicate.
Mrs. C., Alder-shot	63	..	None	£1 10s.	£16 10s.	Widow of 608. Is too old to work.
Mrs. F., Dublin	55	..	None	£1	£6	Widow of 1603, A. H. Corps. Is unable to work.

WIDOWS' AND ORPHANS' FUND.—*Continued.*

Name of recipient	Age	Number of children	If in receipt of a pension. Amount	Monthly grant from Fund	Total amount received from Fund	Remarks
Mrs. S., Woolwich	50	..	None	£1	£4	Widow of 2296 Private. Is unable to obtain any employment. Grant of a temporary nature only.
Mrs. P., Carlisle	37	3	None	£2	£4	Widow of 7223 Private. Continued from grant to man, who has died. Grant temporary only.
Mrs. S., Jamaica	38	2	None	£2	£10	Widow of Qmr.-Sgt., killed in the earthquake at Jamaica. To be paid locally at £2 a month.
Mrs. W., London	30	2	None	12s.	£3 2s.	Widow of 8515 Pte. Granted to assist in the maintenance of her youngest child, while she is in service.

GENERAL RELIEF FUND.

Mr. N., London	46	4	None	£2	£39	Late 5270, widower. Children being looked after by relations. Has only one eye, and vision defective, cannot work.
Mr. A., Netley..	50	4	1s. 6d. a day	£1	£18	Late 2938 Corporal. Has Bright's disease and is unable to work. Wife is delicate. Grant now discontinued.
Mr. P., Netley..	40	3	1s. a day	£2	£20	Late 7223 Private. Has tubercle, and unable to work. Man died, and grant continued to wife.
Mrs. S., Tralee..	46	2	None	..	£15	Wife of a Private in a lunatic asylum. Was granted £2 to clothe her son, she having no means.
Mr. T., Aldershot	40	2	1s. 5d. a day	..	15s.	Late 4715 Corpl. Was granted 15s. to assist him while out of employment.
Mr. B. ,,	37	3	9d. a day	..	10s.	Late 8272 Pte. Was granted 10s. to assist him while out of employment.
Mr. D. ,,	26	1	8d. a day	..	10s.	Late 17602 Pte. Was granted 10s. to assist him while out of employment.
Mr. A. ,,	31	4	None	..	10s.	Late 11657, a Reservist. Was granted 10s. to assist him to return to his home.
Pte. G., Fleetwood	23	..	..	..	£1	Late 18919. Was granted £1 to assist him on his discharge as an invalid.
Mr. W., Clacton-on-Sea	40	2	..	..	£1	Late 7165. Was granted £1 to meet his immediate necessities.

GENERAL RELIEF FUND.—*Continued.*

Name of recipient	Age	Number of children	If in receipt of a pension. Amount	Monthly grant from Fund	Total amount received from Fund	Remarks
Mrs. M., Birmingham	30	1	..	..	£2	Wife of a Reservist who has deserted her. Was granted £2 to assist her during her confinement.
Mr. S., Aldershot	30	..	1s. 6d. a day conditional 10d. a day	..	3s.	No. 14624 Reservist. Granted 3s. to pay his fare home to London.
Mr. L., Longford	61	1	..	..	£1	Late 2642 Pte. Was granted £1 to assist him in replenishing his stock as a hawker.
Mr. L., Portsmouth	36	3	..	£1	£1	Granted £1 for support of youngest child of late 9119 who is in the workhouse, and is leaving to obtain work.

(Signed) E. T. F. BIRRELL, *Captain,*
Hon. Secretary.

BIRTH.

WILLS.—On July 7, at Woodview, Holywood, the wife of Lieutenant-Colonel S. R. Wills, R.A.M.C., of a daughter.

EXCHANGE.

The charge for inserting Notices respecting Exchanges in the Royal Army Medical Corps is 5/- for not more than five lines, which should be forwarded by Cheque or P.O.O., with the notice, to Messrs. G. STREET and CO., Ltd., 8, Serle Street, London, W.C., not later than the 22nd of the month.

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The Editor will be glad to receive original communications upon professional subjects, travel, and personal experiences, &c. He will also be glad to receive items of news and information regarding matters of interest to the Corps from the various garrisons, districts and commands at home and abroad.

All such Communications or Articles accepted and published in the "Journal of the Royal Army Medical Corps" will (unless the Author notifies at the time of submission that he reserves the copyright of the Article to himself) become the property of the Library and Journal Committee, who will exercise full copyright powers concerning such Articles.

Matter intended for the Corps News should reach the Editor not later than the 15th of each month for the following month's issue. All these communications should be written upon one side of the paper only, they should by preference be type-written, but, if not, all proper names should be written in capital letters (or printed) to avoid mistakes, and be addressed The Editor, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, War Office, Whitehall, London, S.W.

Communications have been received from Colonels F. J. Lambkin, R. H. Forman. Lieutenant-Colonels W. M. O'Keefe, W. J. Baker. Majors F. Smith, D.S.O., F. J. W. Porter, D.S.O., W. H. Grattan, W. W. O. Beveridge, D.S.O. Captains G. J. S. Archer, E. W. Bliss, H. D. Packer, R. V. Cowey, W. E. Hudleston, J. C. B. Statham, W. A. Ward; E. D. W. Greig, I.M.S., J. H. P. Graham (M.). Lieutenants A. Dawson, J. H. Douglass, N. Low; H. H. B. Cunningham (M.).

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The publishers will be pleased to receive copies of the January, February and March, 1906, issues of the Journal, for which they are prepared to pay 1s. 8d. each. The copies are required for the purpose of making complete volumes for binding.

The following periodicals have been received: *British Medical Journal*, *The Lancet*, *Army and Navy Gazette*, *Medical Press and Circular*, *The Hospital*, *Annals of Tropical Medicine and Parasitology*, *Journal of the Royal Sanitary Institute*, *Guy's Hospital Gazette*, *The Royal Engineers' Journal*, *St. Bartholomew's Hospital Journal*, *Journal of the Röntgen Society*, *Public Health*, *Journal of Tropical Medicine and Hygiene*, *British Journal of Tuberculosis*, *Middlesex Hospital Journal*, *Journal of the Royal Institute of Public Health*, *Journal of Hygiene*, *Journal of the Royal United Service Institution*, *Journal of the United Service Institution of India*, *Bulletin de l'Institut Pasteur*, *Giornale Medico del Ro Esercito*, *Der Militärarzt*, *Revista de Sanidad Militar*, *Norsk Tidsskrift for Militermedicin*, *Archiv für Schiffs- und Tropen Hygiene*, *Le Caducée*, *Archives de Médecine et de Pharmacie Militaires*, *Archives de Médecine Navale*, *American Medicine*, *The Military Surgeon*.

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JOURNAL

OF THE

ROYAL ARMY MEDICAL CORPS.

Corps News.

SEPTEMBER, 1907.

ROYAL ARMY MEDICAL CORPS.—GAZETTE NOTIFICATIONS.

Lieutenant-Colonel Edwin O. Milward is placed on retired pay, dated July 24, 1907. He entered the Service July 31, 1880; was promoted Surgeon-Major July 31, 1892; Lieutenant-Colonel July 31, 1900; and selected for increased pay of his rank August 19, 1903. His war services are as follows: South African War, 1899-1902—Relief of Ladysmith, including action at Coleenso; operations January 17 to 24, 1900, and action at Spion Kop; operations of February 5 to 7, 1900, and action at Vaal Kranz; operations on Tugela Heights, February 14 to 27, 1900, and action at Pieters Hill. Operations in Natal, March to June, 1900, including action at Laing's Nek (June 6 to 9). As Principal Medical Officer Eastern Mobile Force, April 14 to July 31, 1901. Operations in the Transvaal, April to July, 1901. Operations in the Orange River Colony, September, 1901, to February, 1902. Despatches (Sir R. H. Buller, March 30 and November 9, 1900), *London Gazette*, February 8, 1901. Queen's medal with 6 clasps; King's medal with 2 clasps.

Lieutenant-Colonel Charles R. Woods, M.D., retires on retired pay, dated July 27, 1907. He entered the Service July 31, 1880; was promoted Surgeon-Major July 31, 1892; Lieutenant-Colonel July 31, 1900; and selected for increased pay of his rank August 26, 1903. He served with the Expedition to Manipur, 1891.—Medal with clasp.

Lieutenant-Colonel John L. Hall retires on retired pay, dated August 3, 1907. He entered the Service March 6, 1880; was promoted Surgeon-Major July 6, 1892; and Lieutenant-Colonel March 6, 1900. His war services are as follows: South African War, 1899-1901—Principal Medical Officer of a General Hospital from May 7, 1901. Operations in the Transvaal, 1901. Queen's medal with 3 clasps.

The undermentioned Captains to be Majors, dated July 29, 1907: John V. Forrest, M.B.; John C. B. Statham; Edwin C. Hayes; Edwin T. F. Birrell, M.B.

The undermentioned Majors are placed on retired pay, dated July 27, 1907: George F. Alexander, M.B.; John Paterson, M.B.; Vesey H. W. Davoren.

Major G. F. Alexander entered the Service July 27, 1887, and was promoted Major July 27, 1899. His war services are as follows: Operations in Chitral, 1895.—With the Relief Force. Medal with clasp. Nile Expedition, 1898.—Egyptian Medal. Medal.

Major J. Paterson entered the Service July 27, 1887, and was promoted Major July 27, 1899. His war services are as follows: Operations in Chitral, 1895.—With the Relief Force. Medal with clasp. South African War, 1899-1901.—Relief of Ladysmith, including operations of January 17 to 24, 1900, and action at Spion Kop; operations of February 5 to 7, 1900, and action at Vaal Kranz; operations on Tugela Heights (February 14 to 27, 1900), and action at Pieters Hill. Operations in Natal, March to June, 1900, including action at Laing's Nek (June 6 to 9). Operations in

the Transvaal, June to November 29, 1900. Operations in the Orange River Colony, November, 1900. Operations in Cape Colony, south of Orange River, December, 1899. Operations in Transvaal, November 30, 1900, to March, 1901. Queen's medal with 7 clasps.

Major V. H. W. Davoren entered the Service July 27, 1887, and was promoted Major July 27, 1899.

Major Arthur B. Hinde retires on retired pay, dated August 7, 1907. He entered the Service February 5, 1887, and was promoted Major February 5, 1899. His war services are as follows: North-west Frontier of India, 1897-8.—Medal with clasp. South African War, 1899-1902.—Relief of Ladysmith, including action at Colenso; operations of January 17 to 24, 1900, and action at Spion Kop; operations of February 5 to 7, 1900, and action at Vaal Kranz; operations on Tugela Heights (February 14 to 27, 1900), and action at Pieters Hill. Operations in Natal (March to June, 1900), including action at Laing's Nek (June 6 to 9). Operations in the Transvaal east of Pretoria, July to November 29, 1900, including actions at Reit Vlei, Belfast (August 26 and 27), Lydenburg (September 5 to 8). Operations in the Transvaal, November 30, 1900, to March, 1901. Operations in the Orange River Colony, March, 1901, to May 31, 1902, Despatches (Sir R. H. Buller, February 3 and March 30, 1900), *London Gazette*, February 8, 1901. Queen's medal with 5 clasps. King's medal with 2 clasps.

The undermentioned Lieutenants to be Captains, dated July 30, 1907: Godfrey F. Rugg; Douglas S. B. Thompson, M.B.; John Fairbairn, M.B.; Leonard Bousfield, M.D.; Robert G. Anderson; James H. Douglass, M.D.; Robert R. Lewis; Alexander L. Otway, M.B.; Charles H. Turner; Frank H. Noke, M.B.; Eugene C. Whitehead, M.B.; Walter F. H. Vaughan; Richard B. Hole, M.B.; Travis C. Lucas, M.B.; George E. Cathcart; William Wiley, M.B.; Howard Harding, M.B.; John A. Turnbull; Montagu F. Grant; David P. Johnstone; Edward H. M. Moore; Michael D. Ahern; Frederick J. Garland, M.B.; Alban A. Meaden; Robert J. Cahill, M.B.; Sidney C. Bowle; Harry B. Connell; George S. C. Hayes.

The undermentioned are Lieutenants on probation, dated July 29, 1907: Thomas McCann Phillips, M.B.; Harold Stewart Dickson; George Forbes Dawson, M.B.; Harry Vivian Byatt Byatt; Ronald Ernest Todd, M.B.; Thomas Fletcher Lumb; Harold Gibson; Charles Paget O'Brien Butler; Gerard Petit; John Berehman Hanafin; John Allister Renshaw; Richard Frederick O'Toole Dickinson; William Roche O'Farrell; Ralph De Veil King; Dalziel Buchanan McGregor, M.B.; Cecil Allen Taylor Conyngham, M.B.; John Ross Lloyd; William Charles Carson, M.B.; Richard George Stanhope Gregg, M.B.; Harold Thomsett Treves; Francis Thomas Dowling, M.B.; James Clarence Ledeatt Hingston; Forbes Jackson Stuart, M.B.; Benjamin Alexander Odum; William Arthur Spong, M.B.; James Forgan Grant, M.B.; Henry Percival Hart, M.B.; Arthur Edward Booth Jones, M.D.; Alexander Hendry, M.B.

Lieutenants Ronald E. Todd, M.B., and James C. L. Hingston are seconded under the provisions of Article 349, Royal Warrant for Pay and Promotion, 1906, dated July 29, 1907.

The undermentioned Lieutenants are confirmed in that rank: Hugh E. Gotelee; John H. Spencer, M.B.; Benjamin Johnson; William E. C. Lunn, M.B.; Arthur H. Jacob; Clarence H. Denyer; Alexander D. Fraser, M.B.; Archer Fortescue, M.B.; Geoffrey Carlisle; Howard G. Gibson; Stephen Field; Frederick H. M. Chapman; Henry M. J. Perry; John L. Wood; Frederick T. Turner; Michael P. Leahy, M.B.; William G. Aviss; John E. M. Boyd; Donald F. Mackenzie, M.B.; Richard D. O'Connor; Owen R. McEwen; Malcolm O. Wilson, M.B.; John du P. Langrishe, M.B.; John C. Hart, M.B.; Thomas H. Scott, M.B.; Gerald F. Rudkin; Leopold A. A. Andrews; John H. Curley; Alfred C. Elliott, M.B.; William B. Purdon, M.B.; Francis Casement, M.B.; Edward M. Middleton; Vincent T. Carruthers, M.B.; Harold W. Farebrother.

ROYAL ARMY MEDICAL COLLEGE.

The tenure of appointment of Lieutenant-Colonel H. E. R. James as Commandant, Royal Army Medical College, is extended for a further period of six months, as from August 4, 1907.

Captain Charles F. Wanhill, Royal Army Medical Corps, to be Assistant Professor of Hygiene, *vice* Major Charles E. P. Fowler, Royal Army Medical Corps, dated July 29, 1907.

MEMORANDA.

The King has been graciously pleased to make the following appointment to the Royal Victorian Order, to take effect from the date noted: August 4, 1907: Surgeon-Lieutenant-Colonel Charles Randolph Kilkelly, C.M.G., House Governor and Medical Superintendent, Officers' Convalescent Home, Osborne.

The King has been graciously pleased to grant to Lieutenant-Colonel W. G. Macpherson, C.M.G., Royal Army Medical Corps, permission to accept and wear the Japanese War Medal conferred upon him by His Majesty the Emperor of Japan.

ARRIVALS HOME ON LEAVE.—From India: Lieutenant-Colonels B. L. Mills, S. C. Philson, J. C. Haslett; Majors F. G. Faichnie, W. Tibbits; Captains W. H. Odium, C. D. Myles, S. B. Smith, W. L. Steele, J. Fairbairn; and Lieutenant H. G. Sherrin. From Ceylon: Lieutenant-Colonel G. H. Sylvester. From Malta: Lieutenant-Colonel R. Jennings, Major E. M. Williams, and Captain E. Ryan. From Gibraltar: Lieutenant-Colonel R. W. Ford, D.S.O. From Egypt: Majors P. Evans, C. K. Morgan, and Lieutenant J. H. Graham. From Egyptian Army: Captain R. L. V. Foster. From West Africa: Captains F. Harvey and F. G. Fitzgerald.

EMBARKATIONS.—For Malta: Lieutenant-Colonel J. H. Daly. For Straits Settlements: Majors I. A. O. MacCarthy and E. M. Pilcher. For Jamaica: Major R. W. H. Jackson. For West Africa: Captain A. L. Scott.

POSTINGS.—Lieutenant-Colonel J. R. Dodd to Irish Command; Major W. L. Gray to Southern Command; Major G. T. Rawnsley to Aldershot Command; and Captain W. R. P. Goodwin to Royal Arsenal, Woolwich.

SELECTED LIEUTENANT-COLONELS.—Lieutenant-Colonels R. I. D. Hackett and H. H. Johnston, C.B., have been selected for increased pay of their rank.

EXCHANGES.—Lieutenant-Colonels S. F. Loughheed, C.M.G., and T. Daly. Lieutenant-Colonel J. H. Daly and Major W. L. Gray. Majors S. H. Fairrie and H. P. Johnson. Captains H. M. Nicholls and L. Humphry. Captain R. M. Ranking and Lieutenant A. N. Fraser.

TRANSFERS.—Captain M. P. Corkery, London District to Eastern Command. Captain A. D. Jameson, London District to Aldershot Command, as Specialist in Dermatology, &c.

SERVICE ABROAD.—Lieutenant-Colonel H. L. E. White's name should be added to the list of officers proceeding abroad. Major A. Pearse will now be required to proceed to West Coast of Africa instead of India.

APPOINTMENTS.—Lieutenant-Colonel R. J. Windle to Royal Hospital, Kilmaham. Major E. G. Browne to medical charge Staff and Families, South Dublin. Captain A. D. Jameson to Connaught Hospital, Aldershot, as Specialist in Dermatology, &c. Major G. S. Crawford appointed Sanitary Officer, Malta, *vice* Major W. L. Gray, who has exchanged.

DEGREES AND DIPLOMAS.—Captain H. B. G. Walton obtained the D.P.H. of the Royal College of Physicians and Surgeons, England. Captain E. B. Knox obtained the D.P.H. (with Honours) of the Royal College of Physicians and Surgeons, Ireland. Lieutenant L. Bousfield obtained the degree M.D., Cambridge. Captains J. McD. McCarthy, A. W. Sampey and M. H. G. Fell obtained the Diploma in Tropical Medicine of the University of Liverpool. Lieutenant-Colonel E. Eckersley, Captain W. F. Tyndale, C.M.G., and B. Watts obtained the D.P.H. of the Royal College of Physicians and Surgeons, England. Captain M. H. G. Fell obtained the D.P.H. of the Royal College of Physicians and Surgeons, England. Lieutenant P. A. Lloyd Jones obtained the degree M.B., B.S., Cambridge.

TRANSFERS TO HOME ESTABLISHMENT.—Lieutenant-Colonel J. R. Dodd from India; Major W. L. Gray from Malta (by exchange).

RETIRED PAY POSTS.—Lieutenant-Colonel A. W. Browne, retired pay, to medical charge at Armagh. Lieutenant-Colonel C. R. Woods, retired pay, to medical charge Detention Barracks, Dublin.

LIST OF CASUALTIES:—

Transfer to other Corps.—8233 Staff-Sergeant H. E. Burn to Staffordshire Bearer Company, as Instructor.

Discharges.—7135 Quartermaster-Sergeant G. Foster, termination of second period; 7551 Staff-Sergeant W. Fraser, termination of second period; 7552 Corporal M. Hughes, termination of second period; 7414 Corporal C. Whichelow, termination of second period; 6856 Corporal J. R. Makin, after three months' notice; 12342 Lance-Corporal L. Le Page, medically unfit; 17656 Private E. Haydon, medically unfit; 19132 Private F. Treble, medically unfit; 7505 Private A. Tidmarsh, medically unfit; 7539 Private A. Sibbett, termination of second period; 19349 Private J. Culverwell, medically unfit; 7417 Private J. Ferry, after three months' notice.

Transfers to the Army Reserve.—399 Private F. J. Boyles, 19114 Private J. Bindley, 394 Private T. Hudson, 415 Private M. Reilly, 15091 Private E. Dale, 420 Private A. Elsdon, 424 Private W. H. Bland, 18631 Private B. J. Tibbey, 456 Private T. McMillan, 446 Private W. Hewitt, 457 Private W. Beavon, 423 Private F. Sidwell, 448 Private J. W. Davies, 17594 Private E. McCristall, 19129 Private F. J. Kalloway, 465 Private J. Fewtrell, 464 Private A. E. Chatfield, 18177 Private J. Plimer, 461 Private C. Wilson, 480 Private J. Bell, 459 Private J. Robinson, 477 Private C. Winterburn, 486 Private R. Corcoran, 474 Private P. R. Campbell, 485 Private W. Maden, 476 Private E. A. Ambrose, 478 Private R. Symes, 498 Private J. Lee, 499 Private S. Weir, 491 Private T. H. G. Reid, 541 Private E. H. A. Pratt, 421 Private D. H. C. Nisbet, 383 Private F. Goss, 401 Private T. Hyde, 19306 Private C. Speller, 400 Private P. Gallagher, 426 Private G. H. Arnett, 406 Private H. Davis, 449 Private G. A. Roe, 445 Private J. Goff, 450 Private A. Jones, 427 Private G. R. Powell, 452 Private G. Ross, 447 Private A. J. Franklin, 19498 Private C. H. Brown, 434 Private J. Kendrick, 466 Private A. Bartley, 19138 Private G. P. Godfrey, 440 Private F. Taylor, 462 Private G. E. Carr, 481 Private R. Bannerman, 495 Private W. McFarland, 488 Private A. Haddow, 12480 Private G. R. McHugh, 487 Private J. Downey, 475 Private J. McQueen, 479 Private A. Johnston, 497 Private N. Erskine, 512 Private R. F. Tait, 492 Private R. Young, 19932 Private P. H. Salmons, 19163 Private C. Barnes, 19113 Private J. Biggs, 389 Private S. Humphries, 419 Private M. Finnerty, 404 Private S. Weedon, 417 Private A. J. Evans, 451 Private H. Anderson, 430 Private H. Baxter, 429 Private W. Norman, 432 Private S. W. Howlett, 428 Private P. Duffy, 442 Private A. Rogers, 438 Private P. W. Paterson, 455 Private A. J. Hayes, 19136 Private J. B. Sails, 433 Private H. Leech, 482 Private A. Campbell, 458 Private J. J. Mennell, 463 Private J. R. Williams, 468 Private R. W. Young, 483 Private T. Bushby, 484 Private G. J. Cox, 489 Private H. Kershaw, 469 Private W. H. James, 472 Private J. C. Portbury, 467 Private H. Faro, 471 Private A. Longstaff, 490 Private J. Leagerwood, 502 Private R. Thornhill, 513 Private W. J. Bailey, 519 Private J. Woods, 507 Private G. Kennedy, 514 Private J. Stevens, 516 Private R. Connelly, 520 Private J. A. Brown, 506 Private F. Harvey, 525 Private A. Taylor, 524 Private R. Watson, 529 Private W. Greenlaw, 578 Private W. H. Bonson, 517 Private M. J. Tobin, 515 Private J. Harley, 19145 Private W. T. McGrath, 412 Private S. Cunningham, 532 Private T. Stewart, 527 Private A. Graham, 543 Private J. Fitzgerald, 503 Private G. Cochrane, 542 Private W. Elliott, 19152 Private H. B. Simmons, 523 Private P. Beirn, 19157 Private A. Jones, 528 Private G. Synas, 544 Private R. B. Pyke.

Embarkation for Abroad.—July 6, 1907, per s.s. "Tarquah": 15948 Sergeant G. D. Christie, to Northern Nigeria under Colonial Government.

Deaths.—15230 Lance-Corporal P. Conway, at Standerton, on June 22, 1907; 10218 Private H. D. Cox, at Shorncliffe, on July 26, 1907.

THE FOLLOWING NON-COMMISSIONED OFFICERS AND MEN HAVE QUALIFIED FOR PROMOTION IN THE VARIOUS CORPS EXAMINATIONS, &c.

For Quartermaster-Sergeant.—8842 Staff-Sergeant W. H. Akhurst.

For Staff-Sergeant.—10106 Sergeant E. Gooding.

For Sergeant.—10420 Sergeant A. W. Currie, 15957 Corporal I. W. Wildish, 12890 Corporal J. S. Gardiner, 12373 Staff-Sergeant G. Godden, 12815 Corporal G. Burgess.

For Corporal.—9716 Private G. Wootten, 13058 Private F. G. Heggie, 17465 Private J. Bell, 19543 Private F. E. H. Audus, 19884 Private F. E. Hart, 19876 Private A. Thompson, 18864 Private J. Thorburn, 18332 Private B. B. Bevan, 18395 Private C. A. J. Sheller, 18615 Private P. Magee, 11560 Private J. Clarke, 11258 Private G. Leggett, 754 Private H. Russell, 862 Private J. Gale.

EXTRACTS FROM CORPS ORDERS, DATED ALDERSHOT, JULY 1, 1907.

Promotions.—The following promotions, to complete establishment, will take effect from the dates specified :—

To be Sergeant-Majors.

No.	Rank and Name	Date of Casualty	Section	Vice
7680	Qmr.-Sergt. W. Cary ..	10.6.07	..	T. W. Jent to pension.
8176	„ J. Woollard	26.6.07	..	W. H. Hills „

To be Quartermaster-Sergeants.

8166	Staff-Sergt. W. E. Barber	1.6.07	..	E. G. Lunney to pension.
10616	„ G. T. Bray ..	10.6.07	..	W. Carey promoted.
9435	„ J. McEvoy ..	15.6.07	..	L. J. Kirk to pension.
9818	„ G. R. Baynes	26.6.07	..	J. Woollard promoted.

To be Staff-Sergeants.

9509	Sergt. G. Manship ..	30.4.07	..	T. Devlin to auxiliary forces.
10431	„ H. Underwood ..	1.6.07	..	W. E. Barber promoted.
10665	„ H. J. Angell ..	9.6.07	..	E. G. Woolnough to auxiliary forces
11554	„ R. Spencer ..	10.6.07	..	G. T. Bray promoted.
9862	„ W. F. Raven ..	15.6.07	..	J. McEvoy „
8682	„ G. Read ..	15.6.07	..	W. F. Raven supernumerary with auxiliary forces.
9033	„ A. Medwell ..	26.6.07	..	G. R. Baynes promoted.

To be Sergeants.

10511	Lce.-Sergt. F. Morgan ..	26.6.07	Nursing ..	} To complete new establishment, 1907-08.
16227	„ J. Ashworth			
14123	„ H. Winn ..			

To be Corporals.

8921	Lce.-Corpl. J. Crichtley	26.6.07	Nursing ..	} To complete establishment, 1906-07.
9784	„ C. Hughes ..		Cooking ..	
14512	„ J. Widdall ..		Nursing ..	
14538	„ H. Wells ..		General Duty	
14668	„ A. Amsden ..		Nursing ..	
14729	„ W. H. Dawtrey		„ ..	
15288	„ W. C. Prince		Clerical ..	
15591	„ J. Harris ..		„ ..	

Appointments.—The following appointments to Lance Rank will take effect from the dates specified :—

To be Lance-Sergeants, as Compounders of Medicines.

No.	Rank and Name	Date of Casualty	Section	Remarks
11465	Corpl. H. G. Lenton ..	26.6.07	Nursing ..	} To complete establishment.
17849	„ C. C. Blanks ..		„	
10540	„ G. Bottomley ..		General Duty	
11318	„ H. F. Dewar ..		Nursing ..	

To be Lance-Corporals.

No.	Rank and Name	Date of Casualty	Section	Remarks
1110	Private A. Hepburn ..	7.6.07	Clerical ..	Special under para. 376, S.O., R.A.M.C.
10252	„ J. Sullivan ..	26.6.07	Clerical ..	To complete establishment.
19436	„ H. Worbis ..		Nursing ..	
12440	„ R. Smith ..		„ ..	
13212	„ J. Brown ..		Cooking ..	
15738	„ H. Brough ..		Nursing ..	
15783	„ E. F. H. Lloyd ..		General Duty	
15814	„ J. J. Casey ..		Clerical ..	
15848	„ A. E. Garbett-Burbidge		Nursing ..	
15859	„ P. Arnold ..		„ ..	

Queen Alexandra's Imperial Military Nursing Service.—The undermentioned men have been selected for admission into Q.A.I.M.N.S., with increased pay at sixpence (6d.) a day :—

No.	Rank and Name	Date of Appointment	Station
18545	Private J. Douglas	9.3.07	Woolwich.
18966	„ A. E. Whitney	14.5.07	Aldershot.

Queen Alexandra's Imperial Military Nursing Service.—Approval has been given for 8269 Staff-Sergeant G. A. Gibbs, R.A.M.C., to retain the Badge of the Q.A.I.M.N.S., on promotion.

Award of Army Form C 344.—The undermentioned Orderly has been awarded Army Form C 344 (Certificate of Training as a Nurse), from the date specified : 17179 Private T. McEnnery, April 7, 1905.

Award of Army Form C 344.—The following Non-Commissioned Officers and Orderlies were successful at the examination for the “Certificate of Training as a Nurse,” Army Form C 344, held in May, 1907 :—

No.	Rank and Name	Percentage of Marks	No.	Rank and Name	Percentage of Marks
12533	Lce.-Corpl. H. C. Ward ..	76	17925	Private R. Sheerin ..	63
13923	Private C. Stewart ..	73	14668	Lce.-Corpl. A. Amsden ..	62
10967	Corporal J. W. Humphries	71	18335	Private W. J. Woolway ..	62
14082	„ G. Prince ..	70	18621	„ A. J. Walton ..	61
12487	„ C. Halliday ..	69	11656	Lce.-Corpl. H. J. V. Voisey	60
17427	„ L. Higgins ..	68	11417	Corporal A. Bush ..	60
16756	Lce.-Corpl. N. W. Brown ..	67	18443	Private G. Harris ..	60
19175	Private F. E. Stow ..	67	12619	„ M. Keohane ..	60
18979	„ S. R. Bushnell ..	66	18982	„ A. Newman ..	59
16110	„ J. Wellham ..	66	18969	Lce.-Corpl. E. Gray ..	58
17826	„ T. Malone ..	66	19160	Private C. J. Preston ..	57
17573	„ C. Harlen ..	65	12385	„ E. A. Rayner ..	56
12709	Lce.-Corpl. H. J. Ford ..	65			

Should the names of any candidates who sat for this certificate in the recent examination not appear in this list it will be understood that they failed to qualify.

This remark applies, or will apply, to the case of previous or future examinations for this certificate.

Nursing Section.—The undermentioned have been appointed to the Nursing Section of the Corps from the dates specified against their names :—

No.	Rank and Name	Date of Appointment	No.	Rank and Name	Date of Appointment
19810	Pte. F. C. Cooke ..	10.4.07	702	Pte. A. J. Player ..	6.5.07
150	„ J. Robinson ..		788	„ G. H. Sheldon ..	
12261	Corpl. J. E. Green ..		18409	„ F. M. Horsfield ..	
795	Pte. H. H. Hunt ..	23.4.07	305	„ J. W. Hobbes ..	21.5.07
862	„ J. Gale ..		368	„ R. Gorman ..	
700	„ J. Vincent ..		431	„ E. Holden ..	
935	„ H. M. Griffith-Williams	29.4.07	561	„ R. G. Blacker ..	28.5.07
954	„ H. C. Hallett ..		763	„ T. Desmond ..	
265	„ H. E. Clarke ..		809	„ T. Rowland ..	
19897	„ V. H. Freeman ..	2.5.07	720	„ S. G. Sandford ..	29.5.07
17431	„ S. J. Beasley ..		849	„ T. Read ..	
19433	„ H. Blake ..		866	„ W. Shinn ..	
7	„ L. H. King ..	6.5.07	1108	„ J. A. C. Nicholson	11.6.07
380	„ L. J. Hort ..		293	„ G. Hanchett ..	14.6.07
407	„ A. Budd ..		310	„ H. L. Noble ..	14.6.07
518	„ E. S. Norrie ..	6.5.07	836	„ A. Ashwin ..	17.6.07
560	„ F. J. Norris ..		12025	„ A. E. Harold ..	20.6.07
608	„ S. F. Oldreive ..		16830	„ T. Wallworth ..	26.6.07
617	„ H. C. Crouch ..		15848	„ A. E. Garbett-Burbridge*	

* Re-appointment.

Advancement of Privates.—The following advancements in Rate of Corps Pay will take effect from the dates specified :—

To be Advanced to the Third Rate of Corps Pay (at 8d.).

As Orderlies.

No.	Name	Date	No.	Name	Date
11333	G. C. Fowles ..	1.7.07	17747	F. J. Vine ..	1.7.07
12619	M. Keohane ..		17752	E. Ricketts ..	
13051	W. C. Worth ..		17767	J. Harris ..	
14558	T. W. Sumpter ..		17925	R. Sheerin ..	
15683	T. P. Dent ..		18061	W. Cairns ..	
16355	G. McDonald ..		18118	S. H. Hall ..	
16478	C. B. Boniface ..		18545	J. Douglas* ..	
16677	C. McDonald ..		18727	T. M. Lewis ..	
17015	A. Moore ..		18964	G. W. Herbert ..	
17119	J. Holbrook ..		19044	H. H. Humphrey ..	

* Q.A.I.M.N.S.

As Clerks.

11489 | Mulhern, J. .. | 1.7.07 || 18153 | Beadle, E. E. .. | 1.7.07

*To be Advanced to the Fourth Rate of Corps Pay (at 6d.).
As Orderlies.*

No.	Name	Date	No.	Name	Date
14896	Ritchie, R. . .	1.7.07	19349	Culverwell, J. . .	1.7.07
15093	Harris, G. H. . .		19369	Scanlan, J. . .	
16190	Cowling, J. R. . .		19429	Orton, R. . .	
16887	Crosby, G. E. . .		19446	Davies, D. . .	
18139	Leech, A. . .		19449	Charles, W. . .	
18256	Hodgkins, J. W. . .		19456	Flanagan, W. J. . .	
18418	Smith, G. . .		19481	Mills, A. W. V. . .	
18427	Barber, P. . .		19484	Posner, W. T. . .	
18511	Watson, P. C. A. . .		19497	Jackson, J. K. . .	
18824	Barrett, G. . .		19500	Hudson, C. . .	
18855	Ellison, J. . .		19510	Caulfield, H. S. . .	
19031	Leahy, J. . .		19578	Webster, G. F. . .	
19070	Siddall, H. . .		19627	Hedges, A. H. . .	
19086	Wain, A. . .		19652	Jefford, C. V. . .	
19138	Godfrey, G. P. . .		19684	Davis, G. S. . .	
19175	Stow, F. E. . .		19687	Dellagana, A. C. . .	
19215	Leonard, P. . .		19764	Ayre, W. H. . .	
19225	Thompson, W. H. . .		19863	Mattison, W. H. . .	
19230	Coppins, J. J. . .		19924	Barr, E. D. . .	
19232	Thorpe, W. H. . .		19951	Alberts, G. . .	
19304	Painter, E. . .		148	Allbeury, T. H. . .	
19312	Turner, W. . .		149	Coote, H. N. . .	
19320	Ritchie, H. A. . .				

As Clerks.

17012	Byrne, E. . .	1.7.07	19548	Philips, C. . .	1.7.07
19396	Baker, H. . .		19712	Tumber, H. S. . .	
19471	Johnston, D. C. . .				

As Cooks.

12419	Holden, H. C. . .	1.7.07	17625	Welsh, H. . .	1.7.07
16169	Rose, A. C. . .		17824	Gardiner, P. . .	
17174	Wilson, F. C. . .		18675	Partridge, A. C. . .	
17199	Rogers, F. . .		18722	Leach, W. J. J. . .	
17457	Broomfield, J. . .		19570	Fisher, W. . .	

As Sanitary Orderlies.

19785	T. Elson . . .	1.2.07	19753	A. H. Haines . . .	2.3.07
19893	T. W. G. Rogers . . .		19136	J. B. Sails . . .	6.3.07
19869	T. Baston . . .	6.2.07	17088	W. E. Palmer . . .	16.3.07
19997	R. J. Tilby . . .		19693	J. J. Hitching . . .	8.4.07
799	G. Hepenstall . . .	8.2.07	16446	W. Whitehead . . .	13.4.07
853	D. Lowe . . .		260	P. Renouf . . .	28.4.07
19123	A. G. Smith . . .	12.2.07	855	J. Hegarty . . .	1.5.07
19813	H. Phillips . . .	13.2.07	16881	T. Glancy . . .	27.5.07
19648	F. Stirling . . .	14.2.07	19162	F. Smith . . .	15.6.07
19280	E. Clarke . . .	22.2.07	18735	W. F. V. Forge . . .	
19786	J. D. Buchanan . . .	1.3.07			

Advancement of Privates.—The advancement to the Fourth Rate of Corps Pay at 6d., as an Orderly, of 14922 Private A. McDowell, notified in Corps Orders of 1907, is hereby cancelled.

Amendments—Corps Orders.—(1) With reference to Corps Order of January, 1906, in the column of remarks, opposite the name of 15776 Lance-Corporal H. G. Blackman, for "General Duty Section," read "Nursing Section." (2) With reference to Corps Order of April, 1907, in the column for Section, opposite the name of 15955 Lance-Sergeant H. G. Miller, for "Nursing" insert "General Duty."

Reversions.—The undermentioned Lance-Corporals are reverted to their permanent grade from the dates specified against their names: 12413 E. J. Russell, April 19, 1907; 14690 G. W. Syckelmoore, May 4, 1907; 13229 W. G. H. Stiles, May 6, 1907.

NOTICE.

Union Jack Club.—It is desired that it should be generally known that all warrant officers, non-commissioned officers and men of the Corps, whether stationed at home or abroad, are members of the above Club during their service, the subscription of twenty-four guineas being paid annually out of the General Relief Fund for the whole Corps.

EXTRACTS FROM CORPS ORDERS, DATED ALDERSHOT, JULY 27, 1907.

Promotion.—The following promotion to complete establishment will take effect from the date specified:—

To be Sergeant-Major.

8280 Quartermaster-Sergeant E. E. Ward, July 9, 1907, *vice* A. L. Martin to pension.

Queen Alexandra's Imperial Military Nursing Service.—The undermentioned man has been selected for admission into Q.A.I.M.N.S.:—

12756 Private F. H. Jones, July 17, 1907, Woolwich.

NOTES FROM BULFORD.—Corporal H. G. Lenton, R.A.M.C., writes (July 24, 1907):—

"Royal Army Medical Corps Camp of Instruction—Camp Smoking Concert.—The annual Camp of Instruction for Royal Army Medical Corps was formed south of Sling Plantation, Bulford Camp, from June 19 to July 10, the unit being composed of drafts from the Portsmouth, Netley and Devonport Companies, Royal Army Medical Corps, under the command of Lieutenant-Colonel M. O'D. Braddell, the other officers present being Major D. Lawson, Captains Sparkes, Parsons and Gill, Lieutenants Hayes, Kelly, McCarthy and Cooke, and Quartermaster and Hon. Lieutenant Offord, with Sergeant-Major Crichton. Captain Guthrie, Army Service Corps, was also attached in charge of transport.

"On the evening before breaking up, a most successful Smoking Concert was held. Sergeant-Major Crichton was in the chair, and during the greater part of the evening Lieutenant-Colonel Braddell (Commandant) and the whole of the officers were also present. A capital programme was arranged, and the endeavours of Sergeant-Major Crichton, Sergeant Elliott and Corporal Hoffman, acting as a committee, to make the evening a success were much appreciated. During an interval in the programme, Sergeant-Major Crichton, in a neat and well-chosen speech, proposed the toast, 'Health of the Commandant and Officers of the Camp of Instruction.' The toast was received with quite an ovation of applause, and accorded musical honours. Lieutenant-Colonel Braddell replying, complimented all ranks on the smart and efficient manner in which they had carried out their drills, exercises and duties in camp, and quoted the remarks of the Administrative Medical Officer, Tidworth District, after inspecting the unit, when he expressed his pleasure at the smartness and excellent manner in which the unit performed field work on his inspection. The toast of 'The Health of Sergeant-Major Crichton,' who had made himself very popular with all ranks, was received with prolonged cheering and musical honours. The toast of the 'Health and Success to the N.C.O.'s' was also the occasion for a vociferous display of good feeling, and the singing of 'God Save the King,' terminated a thoroughly enjoyable evening. Appended is the full programme:—

"PART I.

<i>Overture</i>	..	..	..	..	..	PIANIST.
<i>Song (comic)</i>	..	..	..	'Let her Drown'	..	Pte. GROESSELL.
<i>Song (comic)</i>	..	..	..	..	..	Pte. PARSONS.
<i>Song</i>	..	..	..	'Maria'	..	Lance-Corpl. CLEMENTS.
<i>Song</i>	..	..	..	'The Admiral's Broom'	..	Pte. BETTISON.
<i>Song (comic)</i>	..	..	..	Selected	..	Lance-Corpl. WARD.
<i>Song and Dance</i>	..	..	..	'To Market'	..	Pte. PERSTON.
<i>(Encore, 'Left of His Own Accord')</i>						
<i>Song</i>	..	..	..	'Trafalgar Square'	..	Sergt. ELLIOTT.
<i>Song</i>	..	..	..	Selected	..	Driver PERKINS, A.S.C.
<i>Song (parody)</i>	..	..	..	'By the Zuyder Zee' (encored)	..	Lieut. MCCARTHY, R.A.M.C.
<i>Song (comic)</i>	..	..	..	..	..	Pte. STEWART.
<i>Song</i>	..	..	..	'Skylark'	..	Pte. HUTCHINS.
<i>Song</i>	..	..	..	'Stalls and Boxes'	..	Lance-Corpl. CHIPCHASE.
<i>Song</i>	..	..	..	'Reveille'	..	Pte. DEAKIN.
<i>Song (parody)</i>	..	..	..	'Shade of the Old Apple Tree'	..	Pte. SCANLAN, A.S.C.

" PART II.

<i>Song</i> .. ..	.. ..	'John Bull' .. ..	.. ..	Pte. HOWELLS.
<i>Song (parody)</i> .. ..	.. ..	'Bill Bailey' .. ..	.. ..	Corpl. PURCELL, A.S.C.
<i>Recitation</i> .. ..	.. ..	'The Immortal C.I.V.'s' .. ..	.. ..	Sergt. BUTLER.
		(<i>Encore, 'War'</i>)		
<i>Song (encored)</i> .. ..	.. ..	'The Orderly Man' .. ..	.. ..	Pte. RAWLEY, A.S.C.
<i>Song</i> .. ..	.. ..	'Hurrah! for the Life of a Soldier' .. ..	.. ..	Capt. SPARKES, R.A.M.C.
<i>Song (comic)</i> .. ..	.. ..	.. ..	.. ..	Pte. PERSTON.
<i>Song</i> .. ..	.. ..	'The Song that Lives for Ever' .. ..	.. ..	Corpl. COTTERALL.
<i>Song</i> .. ..	.. ..	Selected .. ..	.. ..	Lieut. MCCARTHY, R.A.M.C.
<i>Song (comic)</i> .. ..	.. ..	.. ..	.. ..	Pte. NEWMAN.
<i>Song</i> .. ..	.. ..	'It didn't Come Off' .. ..	.. ..	Sergt.-Major CRICHTON.
<i>Song (comic)</i> .. ..	.. ..	'Mother's Advice' .. ..	.. ..	Lance-Corpl. CLEMENTS.
<i>Song</i> .. ..	.. ..	'Take your Umbrella, John!' .. ..	.. ..	Pte. GROESSELL.
<i>Song (comic)</i> .. ..	.. ..	.. ..	.. ..	Pte. STEWART.
<i>Song</i> .. ..	.. ..	.. ..	.. ..	Pte. DEAKIN.
<i>Song (comic)</i> .. ..	.. ..	.. ..	.. ..	Pte. CARTE.
<i>Song</i> .. ..	.. ..	'As I drive down Strada Reale' .. ..	.. ..	Sergt.-Major CRICHTON.
<i>Song</i> .. ..	.. ..	.. ..	.. ..	Corpl. CAMERON.
<i>Song</i> .. ..	.. ..	'One Touch of Nature' .. ..	.. ..	Pte. HOWELLS.
		'GOD SAVE THE KING.' "		

NOTES FROM THE WEST COUNTRY.—Major R. J. Blackham, R.A.M.C., writes (August 20, 1907):—

"The Director-General visited Devonport during the past month, accompanied by Colonel Sir James Clarke, Bart., C.B. His visit was chiefly in connection with the Devonport Company of the Royal Army Medical Corps Militia, which has been up for training under the command of Captain Dalby.

"Colonel Bourke, C.B., inspected No. 4 Company of the Boy's Brigade, at Plymouth, a short time ago. The inspection took place in the magnificent new Guildhall, in the presence of the Mayor and a large number of naval and military officers and prominent residents. Colonel Bourke made a short and impressive speech at the close of the ceremony, and the Mayor acknowledged Colonel Bourke's interest in the welfare of the boys of the Borough in proposing a hearty vote of thanks.

"Major Vesey Davoren has retired from the Service and proceeded to Bury St. Edmunds for medical charge of the Depot of the Suffolk Regiment. He has been succeeded in the appointment of Adjutant and Registrar of the Military Hospital at Devonport by Captain Douglas.

"The Corps was well to the front at the Stoke Tennis Tournament held a few days ago. Captain Thorpe won two prizes, while Captain E. E. Ellory and Miss St. German, Q.A.I.M.N.S., were second in the mixed doubles, and Captain Douglas also gave a good account of himself.

"Owing to the constant rain the company cricket club has had very few matches, the season being the wettest on record.

"Lieutenant G. Carlisle has applied to resign his commission. This officer was awarded the de Chaumont Prize at the junior course examination of the Royal Army Medical College held in July last.

"Major W. L. Gray has joined the Devonport District from Malta, and has been posted to the Citadel Barracks, &c., Plymouth, for duty, in relief of Lieutenant-Colonel M. Dundon, who has joined the Military Hospital, Devonport, for duty.

"Three men have joined the district for duty from the Scottish Command. Quartermaster-Sergeant P. Plunkett has gone to Cork for duty, and Sergeant Bannister has joined Devonport for duty from Ireland. Lieutenant Coutts, Sergeant Bannister, and two men have gone to Willsworthy Camp for duty.

"Lieutenant G. S. C. Hayes has just been promoted to the rank of Captain. This officer is a keen and successful angler. He caught a fifteen-pound salmon in the Dart a few days ago.

"Sergeant-Major P. Crowley, who has been the warrant officer of No. 7 Company for some years, has proceeded on furlough pending retirement. He received a very hearty send-off from officers and men, as he was deservedly popular with all ranks. He has been relieved by Sergeant-Major Crichton."

NOTES FROM BLOEMFONTEIN.—Major S. F. Clark, R.A.M.C., writes (July 21, 1907):—

"Many members of our Corps will be interested in a wedding which took place here on the 18th inst., between Captain J. T. McEntire, R.A.M.C., and Sister Mary Little,

Army Nursing Service Reserve, daughter of the late James Little, of Sark Tower, Dumfriesshire. It was celebrated in the Garrison Church, Tempe, and was universally admitted to have been a very pretty ceremony. The bridegroom had Captain Cunningham, R.F.A., as his best man, while the bride, who looked simply charming, was given away by Major S. F. Clark, and had two of her late colleagues as bridesmaids. Her friends had decorated the church, which was lit up by the uniforms of officers from every unit in the garrison, and by the dresses of the ladies who came at full strength. At the conclusion of the service, the officers present lined the aisle, and formed an arch of steel with their swords, under which the newly married couple passed, and then went to their carriage between two lines of non-commissioned officers and men of the Corps. The reception was held at Tempe Ridge, where, after the bride and bridegroom had received the congratulations of their friends, the toast of their health was proposed by Lieutenant-Colonel E. L. Maunsell, Administrative Medical Officer of the district, in a eulogistic speech. It was drunk with musical honours and accompanied by rounds of hearty cheers—testifying to the great popularity of the wedded couple, who were both well known in the garrison. The groom made a fitting reply, and shortly afterwards the happy pair left for Johannesburg, *en route* for their new station, Potchefstroom. As they left the house, the ladies showered confetti upon them, while the men once more formed an avenue of crossed swords, down which Captain and Mrs. McEntire passed, and were finally sped by three ringing cheers. This send-off was an effective *finale*, as the gleaming swords were held by men in the picturesque garb of the 93rd Highlanders, the scarlet and gold of the Staff, the 5th Dragoon Guards, and the Royal Engineers, and the blue with bright facings of the Field Artillery, the Army Service Corps and ourselves. Our two late comrades carry away with them our heartiest good wishes for their future happiness and prosperity."

NOTES FROM CEYLON.—Lieutenant C. R. Millar, R.A.M.C., writes (July 25, 1907):—

"Lieutenant-Colonel G. H. Sylvester, S.M.O., left Ceylon for England by the Orient Royal Mail s.s. 'Oruba,' on June 20, 1907, on four months' leave. Lieutenant-Colonel C. A. Lane is acting S.M.O. during Lieutenant-Colonel Sylvester's absence.

"Our cricket eleven has not been making very good strides of late, but considering the total strength of the Royal Army Medical Corps is but twenty-six, including out-stations, we have been fortunate in putting up a pretty good fight, only losing matches by a few runs. The football eleven has played 5 matches during the month, won 3, lost 1, drawn 1; goals for 7 against 5.

"Old time residents of Ceylon will be interested to learn that we had a nice storm in Colombo on the night of the 12 inst., 5 inches of rain falling in an hour—a record, I believe. One of the cocoanut palm-trees in front of the hospital was struck by lightning. With the exception of the foregoing, the south-west monsoon is behaving well, although the period is half over."

NOTES FROM MAURITIUS.—Colonel A. Peterkin, R.A.M.C., writes (July 18, 1907):—

"Changes of station in this command are few except when the annual reliefs take place, but the recent invaliding of Lieutenant-Colonel N. Manders to England on twelve months' leave, moved Major H. E. Staddon from Vacoas to charge of the Military Hospital, Curepipe, and Lieutenant R. J. B. Buchanan from Curepipe to charge of Military Hospital, Vacoas, while Lieutenant G. S. Wallace has moved to Port Louis for the training season.

"The 31st Company Cricket Team, though far from strong, has had a fair share of luck in their matches in the Garrison Cricket League, and with three matches won, are temporarily at the head of the League. The teams defeated were 'Staff and Departments,' 'Non-Commissioned Officers and Men, Leinster Regiment,' and the 'Royal Garrison Artillery.' We have still to meet two strong teams, 'Royal Engineers' and 'The Officers, Leinster Regiment'; the latter the holders of the Cup. In the Football League, for the shield presented by Colonel North, formerly Senior Medical Officer, managed by Sergeant Angell, R.A.M.C., we are, unfortunately, unable to produce a team.

"The health of the men of the Company remains good.

"The opening of a new canteen and recreation room for the Company has added much to the comfort of the men.

"The following appointments and promotions have taken place this year. *To Nursing Section.*—17021 Private E. Crisp. *To be Lance-Sergeant as Compounder of*

Medicine.—11211 Corporal L. T. Marsden. *To be Sergeant*.—12623 Lance-Sergeant H. S. Rolfe. *To be Staff-Sergeant*.—11410 Sergeant W. P. Conolly."

NOTES FROM THE ORANGE RIVER COLONY (July 22, 1907).—It appears that Mediterranean or Malta fever is decreasing in the Philippolis district. The disease, as far as can be ascertained, is almost limited to Philippolis and the immediately adjacent area. Cases have occurred at various centres throughout South Africa, but the disease appears endemic among certain of the goat flocks in Philippolis. The people are becoming alive to the necessity of boiling the milk. Malta fever has been included among the notifiable diseases under the draft Public Health Ordinance, which will ensure accurate information of its prevalence in future.

NOTES FROM SIMLA, INDIA.—Lieutenant-Colonel H. B. Mathias, D.S.O., R.A.M.C., Officiating Secretary to the Principal Medical Officer, His Majesty's Forces in India, writes (July 18, 1907):—

"*Appointments*.—The following are appointed Divisional Sanitary Officers: Captain H. A. Davidson, 1st (Peshawar) Division; Major B. H. Scott (2nd (Rawalpindi) Division; Lieutenant-Colonel J. R. Forrest, 3rd (Lahore) Division; Lieutenant-Colonel R. L. R. Macleod, 4th (Quetta) Division; Lieutenant-Colonel H. P. G. Elington, 5th (Mhow) Division; Lieutenant-Colonel J. Meek, 6th (Poona) Division; Captain P. S. Lelean, 7th (Meerut) Division; Major J. C. Morgan, 8th (Lucknow) Division; Major G. Raymond, 9th (Secunderabad) Division; Captain J. H. Brunskill, Burma Division. The following officers are appointed to charge of Brigade Clinical Laboratories: Captain E. C. Hodgson, I.M.S., Ambala; Captain D. P. Watson, R.A.M.C., Karachi; Lieutenant M. F. Reaney, I.M.S., Kamptee; Lieutenant P. Dwyer, R.A.M.C., Jubbulpore; Captain E. W. Powell, R.A.M.C., Belgaum; Major J. B. Anderson, R.A.M.C., Bareilly; Captain A. W. C. Young, I.M.S., Dehra Dun; Lieutenant J. Morison, I.M.S., Lucknow; Captain W. M. H. Spiller, R.A.M.C., Allahabad; Major C. W. Reilly, R.A.M.C., Calcutta; Captain A. B. Smallman, R.A.M.C., Secunderabad; Captain J. W. Secombe, R.A.M.C., Bangalore. The following officers are appointed to command Station Hospitals: Lieutenant-Colonel H. Cocks, Madras; Captain A. O. B. Wroughton, Cannanore.

"*Leave*.—The following officers have been granted extension of leave out of India: Lieutenant-Colonel J. D. Reckitt, leave on urgent private affairs, from October 6, 1907, to November 4, 1907; Captain B. H. V. Dunbar, general leave from July 31, 1907, to August 11, 1907; Captain C. Bramhall, medical certificate leave from July 5, 1907, to November 4, 1907; Captain J. D. Richmond, medical certificate leave from July 5, 1907, to September 4, 1907; Lieutenant R. B. Hole, medical certificate leave from May 26, 1907, August 25, 1907.

List of Tour expired Officers of the Royal Army Medical Corps detailed to Embark for England in the several Transports to which they have been allotted during the Trooping Season, 1907-08.

Transport and Date of Sailing	Rank and Name	Division or Brigade	Remarks
1st Transport "Assaye," October 4, 1907, from Karachi. (Leaves Aden October 9, 1907)	Lieut.-Col. H. G. Hath- away Capt. R. S. H. Fuhr ,, A. J. Williamson	6th (Poona) .. 2nd (Rawalpindi) Aden	In medical charge.
2nd Transport "Dongola," October 18, 1907, from Bombay	Major L. Way .. Capt. M. W. Falkner .. ,, W. M. Power ..	7th (Meerut) .. 8th (Lucknow) 5th (Mhow)	In medical charge.
3rd Transport "Plassy," (Hospital Ship), Novem- ber 1, 1907, from Bombay	Major R. C. Lewis .. Capt. J. E. Hodgson .. ,, W. S. Crosthwait	7th (Meerut) .. 7th (Meerut) Burma	An extra officer of field rank will be detailed later.
4th Transport "Rewa," November 16, 1907, from Karachi	Lieut.-Col. W. Turner Capt. L. W. Harrison .. ,, H. Rogers	3rd (Lahore) .. 2nd (Rawalpindi) 3rd (Lahore)	In medical charge.
5th Transport "Assaye," December 6, 1907, from Bombay	Lieut.-Col. D. F. Frank- lin Capt. L. L. G. Thorpe ,, F. E. Rowan- Robinson	8th (Lucknow) .. 5th (Mhow) 6th (Poona)	In medical charge.

Transport and Date of Sailing	Rank and Name	Division or Brigade	Remarks
6th Transport "Dongola," December 20, 1907, from Karachi	Lieut.-Col. A. E. Tate Capt. H. W. Long .. ,, C. C. Cumming ..	5th (Mhow) .. 3rd (Lahore) 1st (Peshawar)	In medical charge.
7th Transport "Plassy" (Hospital Ship), January 3, 1908, from Bombay. (Leaves Aden January 8, 1908)	Major F. G. Faichnie .. Capt. W. Davis .. ,, M. F. Foulds ..	Aden .. 7th (Meerut) Aden	An extra officer of field rank will be detailed later.
8th Transport "Rewa," January 16, 1908, from Karachi	Lieut.-Col. W. A. Morris Capt. W. M. H. Spiller ,, E. S. Worthington	2nd (Rawalpindi) 8th (Lucknow) 7th (Meerut)	In medical charge.
9th Transport "Assaye," February 7, 1908, from Bombay	Lieut.-Col. W. Rowney Capt. A. McMunn .. ,, L. Cotterill ..	8th (Lucknow) .. 3rd (Lahore) Burma	In medical charge.
10th Transport "Dongola," February 20, 1908, from Bombay	Lieut.-Col. H. J. Barratt Capt. A. J. W. Wells ..	7th (Meerut) .. Burma	In medical charge. A third officer will be detailed later.
11th Transport "Plassy" (Hospital Ship), March 6, 1908, from Bombay. (Leaves Aden March 11, 1908)	Major B. H. Scott .. Capt. T. F. Ritchie .. ,, J. F. Whelan ..	2nd (Rawalpindi) Aden Aden	An extra officer of field rank will be detailed later.
12th Transport "Rewa," March 19, 1908, from Karachi	Lieut.-Col. M. W. Kerin	1st (Peshawar) ..	In medical charge. Two additional officers will be detailed later.

"The services of these officers will be utilised, if necessary, with troops proceeding from the divisions or brigades in which they are stationed for embarkation in those vessels.

"Officers who have been detailed for the *medical charge* of transports are required to be at Bombay or Karachi, according to the port they are embarking from, five clear days before the date of sailing of their transports, so as to assist in arrangements for accommodation and segregation of special cases. Those detailed for *duty* on board must be at the port of embarkation at least forty-eight hours before the date of sailing of the transports to which they have been allotted.

"Officers requiring passage for their families should apply immediately to the General Officer Commanding the division or brigade in which they are serving, who will arrange with the Officer Commanding at the port of embarkation for allotment of the authorised accommodation in the transport to which they are detailed. In the event of their failing to do so, the responsibility for their families not being provided with passage will rest with them."

NOTES FROM TIENTSIN, NORTH CHINA. — Staff-Sergeant A. G. Andus, R.A.M.C., writes (June 29, 1907): "Lieutenant and Quartermaster G. F. Short, R.A.M.C., successfully qualified in the Chinese language at the Peking Legation, on May 17, 1907, and becomes entitled to an award of £100, under the provisions of Army Order 150 of 1899.

"We are now experiencing the hot weather in North China. The heat during the past month has been very intense, the thermometer having reached 100° in the shade and above several times. On the 26th inst it reached 108°, the highest that has been recorded here since 1902, when it was 113°. The heat is, I think, felt more on account of the very cold weather we have here in the winter; during the past one, which old residents say was a mild one, 23° of frost were registered on two or three occasions.

"We have had several interesting athletic festivals held of late by the international troops quartered here. Most of the events open to the European troops have been won by the British. A very pretty and interesting sight is witnessed in the way in which the troops of the various nationalities intermingle together, all being on the best of good terms, while the different coloured uniforms make the scene very picturesque, and several snap-shots are taken as mementoes. I think I am correct in

saying, that in no other station (Peking excepted) are the armies of the world represented as here.

"The new military hospital recently completed at Peking is now occupied by the British troops. It is a fine building, and has all the latest improvements, &c."

NOTES FROM WYNBERG, CAPE COLONY.—Sergeant-Major C. W. Kinsella, R.A.M.C., writes (July, 1907): "Since my last letter we have played six football matches in the Findlay Cup, resulting in one win, two draws, and three losses. The losses were the first three games, when the team (almost entirely reconstituted) were unused to combination, and had to meet civil teams which have remained practically the same for years past, while the absence at the same time of the Captain (Staff-Sergeant Yeates) through illness was much felt.

"Coronation Day (June 28) was celebrated by the holding of a grand smoking concert, at which some of the best professional talent from Cape Town attended, including Messrs. Reginald White, William Thomas and Harry Hearne. Lieutenant V. H. M. Moore 'brought down the house' with his character 'coster' songs, and had to respond to an enthusiastic recall. The string band of the Yorkshire Regiment also contributed some pleasing selections. Lieutenant-Colonel Heffernan, the popular Officer Commanding, responded to the toast of 'The Officers,' and an enjoyable entertainment was closed with 'The King' at about 11 p.m. All the officers of the Corps serving in the Cape Peninsula were present, as well as a large number from the Yorkshire Regiment.

"The new sanitary sections, both Corps and regimental, have been busily employed under the tuition of Major J. G. McNaught, Sanitary Officer, Cape Colony, in preparation for the September manoeuvres.

"A class of five candidates for 'Part B' Compounders Examination is undergoing instruction under Captain F. W. W. Dawson.

"Major J. E. Carter has been moved to Simons Town, and Lieutenant E. C. Sampson to Middelburg in exchange. Colonel J. C. Dorman, A.M.O., Cape Colony, is acting Principal Medical Officer, South Africa, during the absence on six months' leave of Surgeon-General Donovan."

QUEEN ALEXANDRA'S IMPERIAL MILITARY NURSING SERVICE.

The following ladies have received appointments as Staff Nurses: Miss F. C. Craig, Miss M. E. Don, Miss J. McP. Barclay Smith.

Postings and Transfers.—Matrons: Miss C. M. Chadwick, R.R.C., to Military Hospital, Hounslow, from Military Hospital, Curragh. Sisters: Miss E. C. Cheetham to Military Hospital, Potchefstroom, South Africa, on arrival from England; Miss C. Anderson to Military Hospital, Middelburg, Cape Colony, South Africa, from Military Hospital, Pretoria; Miss E. Foster to Military Hospital, Dover, from Cambridge Hospital, Aldershot; Miss F. A. L. Smith to Military Hospital, Curragh, from the Queen Alexandra Military Hospital, Millbank, London; Miss B. N. Daker to Military Hospital, Canterbury, from the Queen Alexandra Military Hospital, Millbank, London. Staff Nurses: Miss A. B. Cameron to Royal Herbert Hospital, Woolwich, from the Queen Alexandra Military Hospital, Millbank, London; Miss E. A. R. Yockney to the Queen Alexandra Military Hospital, Millbank, London, on appointment; Miss M. H. Graham to Cambridge Hospital, Aldershot, on appointment; Miss M. A. G. Martin to Military Hospital, Curragh, on appointment; Miss A. L. Stuart to Connaught Hospital, Aldershot, on appointment; Miss R. L. Neville to Royal Victoria Hospital, Netley, on appointment; Miss F. C. Craig to Military Hospital, Curragh, on appointment; Miss J. McP. Barclay Smith to the Queen Alexandra Military Hospital, Millbank, London, on appointment; Miss E. M. Croisdale to the Queen Alexandra Military Hospital, Millbank, London, on appointment.

Promotions.—The undermentioned Staff Nurses to be Sisters: Miss G. S. Jacob, Miss M. E. Wilkin.

Appointment Confirmed.—Miss G. H. Sellar.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Lieutenant Henry G. Smeeth, M.D., to be Surgeon-Captain, dated July 6, 1907.

Surgeon-Major Thomas McC. Foley to be Surgeon-Lieutenant-Colonel, dated July 20, 1907.

IMPERIAL YEOMANRY.

Lancashire Hussars.—Surgeon-Major and Honorary Surgeon-Lieutenant-Colonel D. Harrisson to be Surgeon-Lieutenant-Colonel, dated June 9, 1906.

Surgeon-Lieutenant-Colonel D. Harrisson is granted the honorary rank of Surgeon-Colonel, dated June 20, 1907.

Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel D. Harrisson resigns his Commission, with permission to retain his rank, and to wear the prescribed uniform, dated June 21, 1907.

Lincolnshire.—Robert Black Purves, M.B., F.R.C.S. (E), (late Surgeon-Captain, 1st Edinburgh (City) Royal Garrison Artillery (Volunteers)), to be Surgeon-Lieutenant (extra), dated May 14, 1907.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Scottish Command, Aberdeen Companies.—Lieutenant D. Rorie, M.B. to be Captain, dated June 12, 1907.

OTHER VOLUNTEER CORPS.

1st Division, Royal Garrison Artillery (Volunteers).—Harold Cotterel Adams (formerly Lieutenant) to be Surgeon-Lieutenant (supernumerary), under the conditions of paragraph 56, Volunteer Regulations, dated June 1, 1907.

3rd Lancashire, Royal Garrison Artillery (Volunteers).—Surgeon-Major and Honorary Surgeon-Lieutenant-Colonel M. J. Fox resigns his Commission, with permission to retain his rank, and to wear the prescribed uniform, dated June 6, 1907.

6th Lancashire Royal Garrison Artillery (Volunteers).—Surgeon-Lieutenant F. W. Bailey to be Surgeon-Captain, dated June 12, 1907.

1st Midlothian Royal Garrison Artillery (Volunteers).—William Guthrie Porter to be Surgeon-Lieutenant, dated June 17, 1907.

1st Volunteer Battalion, The Royal Welsh Fusiliers.—Surgeon-Captain J. E. H. Davies resigns his Commission, dated June 14, 1907.

1st Volunteer Battalion, The Duke of Cornwall's Light Infantry.—Surgeon-Lieutenant K. M. Pardy resigns his Commission, dated June 15, 1907.

Third Volunteer Battalion, The Welsh Regiment.—Surgeon-Lieutenant C. R. White to be Surgeon-Captain, dated June 12, 1907.

2nd Volunteer Battalion, The Manchester Regiment.—Surgeon-Captain J. A. K. Renshaw, M.D., resigns his Commission, dated May 24, 1907.

2nd Volunteer Battalion, The Manchester Regiment.—Surgeon-Major George Henry Darwin, M.D., retired, to be Surgeon-Major, dated October 30, 1906.

1st Kent Royal Garrison Artillery (Volunteers).—Surgeon-Lieutenant-Colonel R. R. Brown is granted the honorary rank of Surgeon-Colonel, dated July 1, 1907.

3rd Middlesex Royal Garrison Artillery (Volunteers).—Thomas Jefferson Faulder to be Surgeon-Lieutenant, dated July 9, 1907.

1st Cinque Ports Royal Garrison Artillery (Volunteers).—Surgeon-Lieutenant E. A. White, M.D., resigns his Commission, dated July 4, 1907.

EXAMINATIONS.

THE following results of examinations are notified for general information :—

Passed in Military Law for the rank of Lieutenant-Colonel: Majors S. F. St. D. Green, M.B., and H. E. Staddon (75 per cent.).

Passed in Technical Subjects for the rank of Lieutenant-Colonel: Majors G. S. Crawford and C. C. Flemming, D.S.O., M.B.

Passed in S. and E.: Major J. Girvin.

Passed in (h) i. for the rank of Captain: Lieutenant A. M. Rose, M.B.

Passed in (h) ii. and iii. for the rank of Captain: Lieutenants W. Byam, H. C. Winckworth, J. St. A. Maughan, C. P. Thomson, M.D., G. W. Heron, G. S. Wallace, M.B., T. H. Gibbon, M.D., R. J. C. Thompson, H. H. A. Emerson, M.B., A. M. Rose, M.B., E. T. Potts, M.D., and W. McConaghy, M.B.

Passed in (h) iii. for the rank of Captain: Lieutenant R. J. B. Buchanan.

Passed in (d) ii. for the rank of Captain: Lieutenants W. Byam (75 per cent.), H. C. Winckworth (75 per cent.), C. P. Thomson, M.D. (75 per cent.), G. W. Heron, G. S. Wallace, M.B. (75 per cent.), T. H. Gibbon, M.D. (75 per cent.), R. J. C. Thompson (75 per cent.), H. H. A. Emerson, M.B. (75 per cent.), A. M. Rose, M.B. (75 per cent.), E. T. Potts, M.D. (75 per cent.), and W. McConaghy, M.B.

MEMORANDUM.

THE FOLLOWING LIST SHOWS THE POSITION OF OFFICERS ON THE ROSTER FOR SERVICE ABROAD.

Officers who have been nominated for service abroad during the coming season are excluded. Those holding appointments for fixed periods are indicated by the dates of expiry of the appointments.

Selected Lieutenant-Colonels.

Lieut.-Col. A. M. Davies (16.9.08).	Lieut.-Col. F. A. B. Daly, C.B. (8.12.08).
" G. Coutts (retiring Jan., 1908).	" H. W. Murray (8.2.09).
Bt.-Col. D. Bruce (31.1.09).	" W.G.A. Macpherson (29.12.09).
Lieut.-Col. A. G. Kay (23.2.08).	" R. D. Hodson (11.3.09).
" I. B. Emerson.	" S. Townsend (1.4.09).
" J. M. Jones.	" R. I. D. Hackett.
" R. L. Love.	" W. G. A. Bedford, C.M.G.
" G. T. Goggin.	" (6.12.09).
" E. Butt (4.7.08).	" R. Porter.
" L. E. Anderson (30.5.08).	" J. R. Dodd.
" W. J. Baker.	

Lieutenant-Colonels and Majors.

Lieut.-Col. H. E. R. James (retiring Feb., 1908).	Major H. I. Pocock.
" W. B. Leishman (31.1.08).	Lieut.-Col. J. Gibson.
" J. M. Irwin (1.6.10).	" A. F. Russell, C.M.G. (15.2.08).
" R. H. Firth (28.2.09).	Major E. C. Anderson, D.S.O.
" M. W. Russell (31.3.08).	" H. J. Fletcher.
" R. J. S. Simpson (21.8.09).	" H. O. Trevor (15.2.08).
Major M. P. C. Holt, D.S.O. (16.9.08).	Major J. Thomson (13.8.09).
" C. G. Spencer (31.7.09).	" G. B. Stanistreet (7.9.10).
" W. S. Harrison (31.1.10).	" R. J. D. Hall.
Lieut.-Col. C. R. Tyrrell (21.8.09).	" F. J. Wade-Brown.
" R. Caldwell (2.8.09).	" N. Marder.
Major D. Lawson (31.10.08).	" C. A. Stone.
" R. J. Blackham (22.10.08).	Lieut.-Col. J. S. Davidson (6.5.09).
" A. O. C. Watson.	" R. J. C. Cottell (16.8.11).
Lieut.-Col. J. R. Yourdi.	Major T. B. Beach (4.4.10).
" D. L. Irvine.	Lieut.-Col. W. G. Birrell (15.2.08).
" H. E. Cree.	Major R. F. E. Austin.
Major S. W. Sweetman.	Lieut.-Col. M. O'D. Braddell.
Lieut.-Col. W. B. Day.	Major G. A. Moore (23.12.09).
" H. J. Watt.	" F. E. Gunter.
" H. N. Thompson.	Lieut.-Col. and Bt.-Col. F. J. Lambkin (2.1.10).
" S. Powell.	Major R. J. Copeland.
" A. O. Geoghegan.	" C. W. R. Healey.
Major J. C. Weir.	Lieut.-Col. R. J. Geddes, D.S.O.
" H. C. Thurston, C.M.G. (17.8.08).	Major W. L. Gray.
" J. W. Bullen.	" W.W.O. Beveridge, D.S.O. (17.6.08).
" C. E. G. Stalkart.	" C. W. H. Whitestone.
Lieut.-Col. T. H. F. Clarkson (2.2.09).	" F. A. Symons.
Major A. G. Thompson.	Lieut.-Col. R. H. Penton, D.S.O. (10.12.09).
" D. D. Shanahan.	Major F. J. W. Porter, D.S.O.
Lieut.-Col. T. W. O. H. Hamilton (2.4.10).	" J. D. Ferguson, D.S.O. (12.6.08).
Major G. A. T. Bray (20.8.10).	" J. C. Connor.
Lieut.-Col. F. S. Heuston, C.M.G. (30.9.07).	" E. G. Browne.
Major C. B. Martin.	Lieut.-Col. J. V. Salvage (11.10.09).
Lieut.-Col. H. T. Knaggs.	Major J. D. Alexander.
" C. J. Macdonald.	Lieut.-Col. A. Dodd.
" M. Dundon.	" J. H. Curtis.
Major A. J. Chambers.	" A. T. I. Lilly.
Lieut.-Col. C. W. S. Magrath.	Major J. F. M. Kelly.

Lieutenant-Colonels and Majors.—Continued.

Lieut.-Col. S. E. Duncan.	Lieut.-Col. R. Kirkpatrick, C.M.G.
„ C. E. Faunce.	(17.1.10).
„ C. H. Burtchael (7.1.11).	Major E. E. Powell.
„ R. P. Bond.	Lieut.-Col. E. Eckersley (8.3.10).
„ S. R. Wills.	„ S. F. Longheed, C.M.G.
Major G. W. Tate.	„ G. G. Adams (29.8.09).
Lieut.-Col. R. J. Windle.	Major C. R. Elliott (19.10.09).
Major S. J. C. P. Perry.	„ H. J. M. Buist, D.S.O. (30.4.10).
Lieut.-Col. H. W. Austin.	Lieut.-Col. A. A. Sutton, D.S.O. (21.1.10).
Major H. C. French.	„ C. E. Nichol, D.S.O. (5.11.09).
„ L. F. Smith (4.12.09).	Major H. S. Thurston.
Lieut.-Col. Sir A. A. Brooke Pechell, Bart.	Lieut.-Col. J. B. W. Buchanan.
(31.3.09).	„ G. W. Brazier-Creagh.
Major J. V. Forrest.	„ R. W. Wright (14.3.10).
„ E. T. F. Birrell (30.9.09).	„ R. R. H. Moore (9.3.10).
„ F. J. Morgan (18.12.08).	„ R. H. Hall (15.2.09).
Lieut.-Col. C. Birt.	Major J. J. C. Watson, C.I.E.
Major E. M. Hassard.	„ S. H. Fairrie (23.10.07).
Lieut.-Col. C. W. Johnson.	„ C. T. Samman.
„ D. M. Saunders (28.1.10).	Lieut.-Col. H. L. Battersby.
Major G. S. McLoughlin, D.S.O.	Major J. Ritchie.
„ H. W. Grattan.	„ G. T. Rawnsley.
„ J. H. Rivers.	„ C. J. Healy.
Lieut.-Col. W. Dick.	Lieut.-Col. C. L. Josling (10.3.10).
Major J. H. E. Austin.	„ C. S. Sparkes.
„ W. C. Poole.	Major S. H. Withers.
Lieut.-Col. C. H. Melville (1.2.09).	Lieut.-Col. R. G. Hanley.
Major H. A. Bray.	„ R. S. F. Henderson (31.5.10).
	Major R. J. W. Mawhinny.

Captains.

Captain L. N. Lloyd, D.S.O. (31.10.08).	Captain M. H. Babington.
„ A. J. McDougall (16.10.08).	„ H. S. Roch.
„ J. D. G. Macpherson (12.6.08).	„ E. P. Connolly.
„ A. E. Weld (26.11.08).	„ L. E. L. Parker.
„ E. T. Inkson, V.C. (24.10.08).	„ W. A. Woodside.
„ S. G. Butler.	„ J. W. H. Houghton.
„ J. Mathews.	„ F. G. Richards.
„ B. Watts (16.10.09).	„ V. J. Crawford.
„ W. P. Gwynn.	„ M. M. Lowsley (1.8.09).
„ J. M. Sloan.	„ P. J. Probyn, D.S.O.
„ J. I. W. Morris.	„ H. M. Nicholls.
„ H. D. Packer.	„ T. C. Lauder.
„ H. K. Palmer.	„ J. G. Gill.
„ S. A. Archer.	„ A. M. MacLaughlin.
„ J. Poe (1.8.09).	„ R. A. Cunningham.
„ F. J. Palmer.	„ W. J. P. Adye-Curran.
„ B. F. Wingate.	„ H. M. Morton.
„ G. M. Goldsmith.	„ A. F. Carlyon.
„ P. H. Falkner.	„ G. J. S. Archer.
„ P. Mackessack.	„ E. W. Siberry.
„ H. C. R. Hime (5.2.09).	„ J. H. R. Bond.
„ J. W. Langstaff.	„ E. E. Ellery.
„ J. J. W. Prescott, D.S.O.	„ H. O. B. Browne-Mason.
„ R. H. Lloyd.	„ F. Ashe.
„ A. E. Thorp.	„ W. W. Scarlett.
„ M. H. G. Fell.	„ H. L. W. Norrington.
„ C. J. O'Gorman, D.S.O.	„ G. G. Delap, D.S.O.
„ E. F. Q. L'Estrange.	„ J. W. Leake.
„ O. W. A. Elsner.	„ A. L. Scott.
„ C. W. Mainprise (1.8.09).	„ N. J. C. Rutherford.
„ H. F. Shea.	„ E. Bennett.
„ W. R. Blackwell.	„ H. Simson.

Captains.—Continued.

Captain H. S. Taylor.	Captain G. E. F. Stammers (12.4.10).
" F. A. Stephens.	" G. F. Rugg.
" E. G. Ford.	" J. B. Cautley.
" E. W. Bliss.	" W. B. Fry.
" E. McDonnell.	" C. H. Furnivall.
" James M. Buist.	" R. L. Ronayne.
" H. B. G. Walton.	" R. F. Ellery.
" W. A. Ward.	" E. G. Ffrench.
" H. R. Bateman.	" G. S. C. Hayes.
" H. B. Fawcus.	" R. L. Popham.
" E. P. Hewitt.	" H. Herrick.
" J. Tobin.	" M. Swabey.
" J. G. Churton.	" W. M. B. Sparkes.
" P. S. O'Reilly.	" A. W. N. Bowen.
" A. L. A. Webb.	" W. Riach.
" W. L. Bennett.	" J. C. Kennedy.
" A. H. Safford.	" T. J. Potter.
" H. P. W. Barrow.	" R. T. Brown (15.11.09).
" J. A. Hartigan.	" J. H. Robinson.
" G. H. Goddard.	" J. T. Johnson.
" J. H. Barbour.	" R. V. Cowey.
" A. D. Waring.	" R. N. Hunt.
" A. D. Jameson.	" W. M. McLoughlin.
" T. E. Fielding.	" P. H. Henderson.
" G. Carroll.	" F. S. Penny.
" M. P. Corkery.	" J. Dorgan.
" C. E. Fleming.	" A. C. Duffey.
" F. M. Parry.	" W. H. S. Nickerson, V.C.
" W. L. Baker.	" F. H. Merry.
" B. R. Dennis.	" W. J. Waters.
" H. G. F. Stallard.	" T. H. Stevenson.
" F. MacLennan.	" C. F. Wanhill (27.7.11.)
" F. W. Cotton.	" A. H. Morris (9.7.10).
" W. Bennett.	" E. E. Parkes.
" G. F. Sheehan.	" E. Brodribb.
" F. W. Lambelle.	" A. W. Gibson.
" L. M. Purser.	" C. R. Evans.
" E. V. Aylen.	" J. B. Clarke.
" A. E. Hamerton, D.S.O.	" B. S. Bartlett.
" J. M. Cuthbert.	" D. J. F. O'Donoghue.
" A. F. Weston.	" P. C. Douglass.
" J. W. West.	" T. B. Unwin.
" S. M. Adye-Curran.	" J. S. Bostock.
" A. W. A. Irwin.	" J. McD. McCarthy.
" B. A. Craig.	" A. R. O'Flaherty.
" C. H. Straton.	" A. R. Greenwood.
" E. P. Sewell.	" P. G. Hyde.
" A. C. Adderley.	" A. A. Seeds.
" F. P. Lauder.	" J. P. J. Murphy.
" A. R. C. Parsons.	" H. A. Bransbury.
" R. N. Woodley.	" R. C. Wilson.
" L. Wood.	" A. H. McN. Mitchell.
" J. Powell.	" J. Cowan.
" E. W. W. Cochrane (5.11.09).	" G. Baillie.
" H. E. J. A. Howley.	" B. B. Burke.
" J. G. Foster.	" F. G. Fitzgerald.

ROYAL ARMY MEDICAL COLLEGE.

LIST OF SUCCESSFUL CANDIDATES FOR COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS AT THE RECENT EXAMINATION IN LONDON FOR WHICH 59 CANDIDATES ENTERED.

Names	Medical School	Qualifications	Marks
Phillips, T. M. C. ..	Queen's College, Belfast	B.A., M.B., B.Ch., R.Univ., Ireland	605
Dickson, H. S. ..	St. Bartholomew's Hpl.	B.A.Cantab., M.R.C.S.Eng., L.R.C.P.Lond.	591
Dawson, G. F. ..	Aberdeen University ..	M.A., M.B., B.Ch., Univ., Aberdeen	586
Byatt, H. V. B. ..	London Hospital ..	M.R.C.S.Eng., L.R.C.P.Lond.	573
Todd, R. E... ..	St. Thomas's Hospital ..	M.B., B.S.Lond., M.R.C.S.Eng., L.R.C.P.Lond.	561
Lumb, T. F. ..	Middlesex Hospital ..	M.R.C.S.Eng., L.R.C.P.Lond.	546
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Jones, A. E. B. ..	Dublin University ..	M.D., M.B., B.Ch., Univ., Dublin	440
Hendry, A. ..	Aberdeen University ..	M.B., B.Ch., Univ., Aberdeen	430

LIST OF CAPTAINS WHO PASSED FIRST SENIOR COURSE, 1907.

Names	Class Certificate Awarded	Acceleration in Promotion	Special Subject	Qualified as a Specialist
H. G. F. Stallard ..	3rd ..	3 months ..	Bacteriology ..	No.
H. B. Fawcus ..	1st ..	12 " ..	State medicine ..	Yes.
A. L. A. Webb ..	2nd ..	6 " ..	" ..	"
W. Bennett ..	3rd ..	3 " ..	" ..	"
W. L. Bennett ..	3rd ..	3 " ..	Operative surgery ..	No.
J. A. Hartigan ..	3rd ..	3 " ..	" ..	"
E. P. Hewitt ..	3rd ..	3 " ..	State medicine ..	"
T. E. Fielding ..	2nd ..	6 " ..	Bacteriology ..	Yes.
A. D. Waring ..	3rd ..	3 " ..	" ..	No.
H. S. Taylor ..	Nil ..	Nil ..	Operative surgery ..	"
P. S. O'Reilly ..	3rd ..	3 months ..	Ophthalmology ..	Yes.
J. B. Cautley ..	Nil ..	Nil ..	Dental surgery ..	"
H. R. Bateman ..	3rd ..	3 months ..	Bacteriology ..	"
B. R. Dennis ..	3rd ..	3 " ..	" ..	"
F. McLennan ..	Nil ..	Nil ..	Operative surgery ..	No.
A. H. Safford ..	3rd ..	3 months ..	Bacteriology ..	Yes.
G. Carroll ..	Nil ..	Nil ..	State medicine ..	No.
J. H. Barbour ..	Nil ..	Nil ..	Dermatology, &c. ..	"
H. P. W. Barrow ..	1st ..	12 months ..	Bacteriology ..	Yes.
F. M. Parry ..	3rd ..	3 " ..	State medicine ..	No.
H. O. B. Browne-Mason ..	2nd ..	6 " ..	Dermatology, &c. ..	Yes.
A. D. Jameson ..	2nd ..	6 " ..	" ..	"
F. W. Cotton ..	3rd ..	3 " ..	Midwifery, &c. ..	No.
J. G. Churton ..	3rd ..	3 " ..	Operative surgery ..	Yes.
W. A. Ward ..	Nil ..	Nil ..	Dermatology, &c. ..	"
M. R. Corkery ..	2nd ..	6 months ..	State medicine ..	"
N. J. C. Rutherford ..	Nil ..	Nil ..	Bacteriology ..	No.

LIST OF PRIZE-WINNERS AT THE RECENT EXAMINATION OF THE FIRST JUNIOR COURSE, 1907, ROYAL ARMY MEDICAL COLLEGE.

Name	Subject	Prize
Lieutenant J. H. Spencer ..	Military Medical Administration ..	Marshall Webb.
" G. Carlisle ..	Hygiene ..	De Chaumont.
" A. D. Fraser ..	Highest aggregate ..	Herbert.
	Pathology ..	Pathology.

DISTRIBUTION OF CAPTAINS AT THE TERMINATION OF THE FIRST SENIOR COURSE, JULY, 1907.

Names	Command	Names	Command
H. B. Fawcus ..	London District for attachment to R.A.M. College.	J. B. Cautley ..	Eastern Command.
F. M. Parry ..	London District.	J. A. Hartigan ..	" "
A. D. Jameson ..	" "	H. G. F. Stallard ..	Aldershot Command.
A. L. A. Webb ..	" "	A. H. Safford ..	" "
H. O. B. Browne-Mason ..	" "	P. S. O'Reilly ..	Southern Command.
H. R. Bateman ..	" "	B. R. Dennis ..	" "
W. L. Bennett ..	Scottish Command.	W. Bennett ..	Irish Command.
F. McLennan ..	" "	T. E. Fielding ..	" "
J. G. Churton ..	" "	G. Carroll ..	" "
F. W. Cotton ..	Eastern Command.	A. D. Waring ..	" "
E. P. Hewitt ..	" "	J. H. Barbour ..	" "
		H. P. W. Barrow ..	" "
		H. S. Taylor ..	" "

QUESTIONS SET AT THE EXAMINATION OF CAPTAINS, ROYAL ARMY MEDICAL CORPS,
FOR PROMOTION TO MAJOR, JULY, 1907.

Medicine.—Friday July 19, 1907. Commencing at 2.30 p.m. (Time allowed, three hours.)

- (1) Causes, diagnosis, and treatment of dilation of the stomach?
- (2) Cerebro-spinal fever. Its pathology, diagnosis, and treatment?
- (3) Describe the principal forms of anæmia. Give the differential diagnosis and treatment.
- (4) Empyema. Its etiology, pathology, and treatment.
- (5) Describe the symptoms of chronic poisoning by—(a) Arsenic; (b) Lead.
- (6) Describe the varieties of herpes you have met in practice. Illustrate as fully as you can the relations of diseases of the skin to nerve-distribution.

Surgery.—Saturday, July 20, 1907. From 10 a.m. to 1 p.m. [N.B.—The two last questions, 5 and 6, are to be answered in a separate book from that in which the other questions are answered.]

- (1) Give an account of the microscopic and naked eye appearances of *villous tumours*, their favourite sites, their clinical symptoms and characters, and the principles on which they are treated.
- (2) What is known regarding the etiology of *arthritis deformans (oste-arthritis) of the hip-joint*, what lesions of the bones does it produce, to what symptoms does it give rise, what clinical course does it run, and what treatment does it call for?
- (3) In fractures of the skull (vault and base), how and in what situations may *blood be extravasated*, by what characteristic symptoms or appearances may the nature of the injury be diagnosed, and for what operative treatment may these call?
- (4) Give minutely the symptoms and appearances in *sub-coracoid dislocation of the caput humeri*, and mention how reduction can best be effected—(a) In emergencies, without appliances or skilled aid; (b) in a field hospital, during a campaign, with only ordinary appliances, the injury being a recent one; (c) in a base hospital or infirmary, with every appliance at hand, but where the case is difficult from having been for some time unreduced.
- (5) Discuss the diagnosis, prognosis, and treatment of gunshot injuries of the spine.
- (6) Under what circumstances may amputation become necessary for a gunshot wound?

Refraction and Skiagraphy (Written).—(As part of the Examination in Surgery.) Tuesday, July 23, 1907. From 10 a.m. to 12 noon.

- (1) What conditions affect the time of exposure required for taking a skiagram, and how does each affect it?
- (2) How would you examine a case of obscure injury to the ankle by means of X-rays, and how would you guard against possible errors in diagnosis?
- (3) In using X-rays, what are the dangers to the patient and the operator, and how are they to be avoided?
- (4) How is the vision of recruits tested and recorded, and what is the standard of vision required?
- (5) Give a brief account of myopia, including its symptoms, prognosis, and treatment.

Lists of Subjects for Essays.—Friday, July 19, 1907. Commencing 10 a.m. (Time allowed, three hours.) [N.B.—One subject only to be selected.]

- (1) The symptoms indicative of failure of the circulation due to default of the heart itself, including a discussion of the manner in which different cardiac lesions conduce to this result.
- (2) The distribution, pathology and clinical features of Mediterranean (Malta) fever, including an account of the steps by which the nature of the infection was ascertained.
- (3) The diagnostic information to be gained by an examination of the blood as regards—the number and form of the red corpuscles, the number and various forms of white corpuscles, the percentage of hæmoglobin, and the colour index. (Blood parasites not required.)
- (4) The differential diagnosis of the different forms of splenic enlargement and of the diseases with which such enlargement is associated.
- (5) The causes, morbid anatomy and clinical characters of peripheral neuritis.
- (6) Tuberculosis of the kidney, its symptoms, diagnosis, pathology (including morbid anatomy), and treatment.
- (7) The complications and sequelæ of prostatectomy and their management.

- (8) Post-operative hæmatemesis—its nature, treatment and prognosis.
- (9) The operative treatment of trigeminal neuralgia and the results expected.
- (10) Cartilaginous tumours—the various kinds, favourite sites, progress and treatment.
- (11) The malformations of the spine, the indications for operation, the risks, immediate and remote, and the prognosis.
- (12) The operative measures available in paralytic talipes.

EXAMINATION FOR ADMISSION TO THE ROYAL ARMY MEDICAL CORPS.

Medicine.—(Case for Commentary.) Thursday, July 25, 1907, commencing 10 a.m. (Time allowed, one and a-half hours.) Read your instructions.

William K., aged 44, a policeman, gave the following history: He has been of temperate habits and has not had syphilis. Up to June, 1905, he enjoyed good health. He was then admitted to hospital suffering from an acute illness of sudden onset, of which the chief symptoms were severe pain in the left side of the chest, cough, expectoration of a brownish-red phlegm, and fever. After about ten days the temperature fell, but the cough and expectoration continued, and he remained in hospital until November, 1905. He has not felt well since, although from February to September, 1906, he performed his duties.

In October he suffered from a "sharp gripping pain in the stomach." The pain was increased by taking food and came on at intervals of from five minutes to half an hour after meals. He did not vomit. In November he passed some blood with the motions.

In December, 1906, he was again admitted to hospital complaining of pain in the left side of the chest, cough and expectoration. The sputum was abundant, frothy, slightly blood-stained, non-purulent, and not offensive; it contained streptococci, pneumococci, and leptothrix, but no tubercle bacilli.

The temperature ranged from 97° F. (M.) to 99° F. (E.). On three occasions it touched 100° F. The fingers and toes were clubbed. Resonance was impaired over the area of the left lower lobe, where the breath sounds were weak but bronchial in character. At the extreme base there were a number of friction-like râles. The vocal fremitus was well marked. The apex beat was in the fourth interspace, within the nipple line.

On January 1, 1907, during a fit of coughing, the patient noticed a swelling about the size of a small hen's egg over the junction of the right fourth rib with its cartilage. That evening the temperature rose to 100° F. The swelling was tender on pressure, did not fluctuate or pulsate; it remained unchanged for about three weeks and then slowly disappeared.

On January 9 the patient complained of numbness and weakness in both legs and in both hands, from the finger-tips to the wrist.

On January 17 there was partial loss of power in the legs and arms, loss of sensation to light touch up to the knees; sensation to pain was greatly diminished, but not lost. Extremes of heat and cold could be distinguished over certain areas in the legs. In the hands all forms of sensibility were diminished, but nowhere lost. The knee-jerks were absent; there was no extensor response.

During February power was to some extent regained and the sensory loss was less marked.

Improvement continued, and by the end of the month he could walk without the aid of a stick. Shortly afterwards he left the hospital.

Discuss fully the diagnosis, prognosis, and treatment of this case.

Surgery.—(Case for Commentary.) Thursday, July 25, 1907, commencing 11.30 a.m. (Time allowed one and a half hours.) Read your instructions.

A boy, aged 12, presents himself with the following history: "When a baby he had a heavy fall on his head; subsequently a swelling appeared over the right parietal region, which gradually increased, but has now been for some time stationary. The present condition of the left hand and arm has existed as long as he can remember."

Present condition: On the right side of the head is a large prominent swelling, occupying the posterior two-thirds of the parietal bone. It is distinctly fluctuating, and increases in size and tension when he lies down or makes a forced expiratory effort, but no pulsation can be felt in it. Around the margin of the prominent swelling is a firm edge of bone which dips steeply inwards like a crater beneath the swelling.

The patient's intelligence and nutrition are good, and he complains of no pain or discomfort.

The left upper extremity is wasted and paretic, and the digits are contracted and claw-like. The lower extremity on the same side is also wasted and paretic; he walks with a limp and drags his foot. The knee-jerks on the left side are exaggerated.

Discuss the case generally, directing your remarks especially to the nature of the lesions and their relation, if any, to each other.

Discuss also the treatment and the prognosis, with or without treatment.

REGISTER FOR INDIAN SERVANTS.

Few officers on going to India have not experienced the difficulty of getting good servants. The discomforts on arrival and of a long journey up country, unprovided with a bearer, or, what is worse, provided with a hastily selected man, taken haphazard from the crowd of indifferent or bad characters who congregate in Bombay, have fallen to the lot of most of us, whilst the period of trial and vexation until a proper staff of servants is secured is familiar to us all.

In our Corps, with regular annual reliefs, it should not be difficult to arrange for an interchange. Officers leaving India would then be able to provide places for the good and tried retainers they are relinquishing, and new arrivals would, by taking on these men, be spared many of the worries and troubles which now befall them. Further, good servants would not be lost to the Corps, and the prospects of continuous employment could not fail to have attraction for the better class of men.

With these ends in view, officers due home from India are requested to communicate to the Journal particulars of servants whom they can recommend, so that officers going out in relief may have an opportunity of securing these men. The particulars required are:—

- (1) Class of servant.
- (2) Whether for bachelor or married officer.
- (3) District or station to which he belongs.
- (4) Any special recommendations.

NOTE.—The date the officer leaves India should also be stated, and when and where the servant will be available.

Captain C. H. Straton, R.A.M.C., sends the following particulars of a servant, Calcuttee, whom he employed for about eighteen months.

- (1) Bearer, or bearer-khitmahghar.
- (2) Bachelor or married officer.
- (3) Meerut, United Provinces.

(4) "An excellent servant, steady, clean, honest and respectful. An excellent manager."

Name and address—Calcuttee, Bearer, Kiraiganj Mohullah, Dragoon Bazaar, Meerut Cantonment, U.P., India.

Lieutenant-Colonel J. B. Wilson, R.A.M.C., Alexandria, also sends particulars of the same man. He states: "He was my bearer for six years on end. He is equally useful to a bachelor or married officer. Will serve anywhere in the Punjab, North-West, or Bengal. He is a Hindoo, an oldish man, quite honest, reliable and obliging. Very good at keeping kit clean. I never saw any one who could do polo boots like he can. He is not of the impressive appearance and demeanour of the high caste Brahmin servant, but he is honest, useful, and faithful."

FOURTEENTH INTERNATIONAL CONGRESS FOR HYGIENE AND DEMOGRAPHY, BERLIN, 1907.

On the occasion of the XIV. International Congress for Hygiene and Demography, the most prominent men of science and practice, who are interested in Hygiene and Demography, will probably meet at Berlin between September 23 and 29. More than 1,400 applications have already been received from all civilised countries. Among the number of visitors there will be a great many delegates from the German Government and from those of other countries.

HIS HIGHNESS PRINCE HENRY ZU SCHÖNHAICH-CAROLATH has graciously consented to act as President of the XIV. International Congress for Hygiene and Demography.

Dr. Rubner, Privy Councillor of Medicine, Professor of Hygiene at the Royal University of Berlin, and Professor Dr. von Mayr, Under-Secretary of State, Munich, will be Vice-Presidents.

MARRIAGE.

BIRKETT-GRIEVE.—On August 14, in the Established Church, Stevenston, Ayrshire, N.B., by the Rev. R. J. Kyd, Percy Birkett, Civil Engineer, son of Matthew Birkett, Civil Engineer, Burnley, to Gertrude Elizabeth Forrest, daughter of George Grieve, late warrant officer, Royal Army Medical Corps.

DEATHS.

COCKBURN.—On June 9, at Guernsey, Honorary Brigade-Surgeon James Balfour Cockburn, M.D., late Surgeon-Major retired Medical Department, aged 77 years. He entered the Service March 3, 1854; was promoted Surgeon January 8, 1864; and Surgeon-Major March 1, 1873. He served in Turkey from April 6, 1854, to August 3, 1856. On April 5, 1892, he retired with the honorary rank of Brigade-Surgeon.

KELLY.—On June 29, at Kingstown, co. Dublin, Brigade-Surgeon-Lieutenant-Colonel James Bennett Kelly, retired Army Medical Staff, aged 67 years. He entered the Service September 30, 1864; was promoted Surgeon March 1, 1873; Surgeon-Major September 30, 1876; and Brigade-Surgeon-Lieutenant-Colonel May 31, 1890; retiring May 3, 1893. His war services were as follows: Burmese Expedition, 1888-90.—Medal with clasp.

McDOWELL.—On July 26, Surgeon-Colonel Edmund Greswold McDowell, C.B., retired Army Medical Staff, aged 75 years. He entered the Service November 6, 1855; was promoted Surgeon September 3, 1870; Surgeon-Major March 1, 1873; Brigade-Surgeon August 4, 1881; and Surgeon-Colonel March 4, 1886; retiring November 30, 1891. His war services were as follows: China War, 1860.—Action at Sinho, storming and capture of the Taku Forts. Medal with clasp. Egyptian Expedition, 1882-84.—Medal; bronze star; 3rd class Medjidie. Soudan Expedition, 1884.—Principal Medical Officer. Battles of Teb and Tamai. Despatches, *London Gazette*, March 27, and May 6, 1884. Two clasps, C.B.

PRESTON.—On July 24, Surgeon-General Alexander Francis Preston, M.B., K.H.P., retired Army Medical Staff, aged 65 years. He entered the Service September 30, 1863; was promoted Surgeon March 1, 1873; Surgeon-Major, April 28, 1876; Brigade-Surgeon-Lieutenant-Colonel November 30, 1886; Surgeon-Colonel March 28, 1892; and Surgeon-Major-General March 30, 1896; retiring on retired pay May 23, 1902. His war services were as follows: Afghan War 1879-80.—Battle of Maiwand (severely wounded), action of Ghirisk and siege of Kandahar. Despatches, *London Gazette*, November 19, 1880. Medal. Promoted Surgeon-Major, with relative rank of Lieutenant-Colonel. The deceased officer held the appointment of K.H.P., and was in possession of a Good Service Reward.

EXCHANGE.

The charge for inserting Notices respecting Exchanges in the Royal Army Medical Corps is 5/- for not more than five lines, which should be forwarded by Cheque or P.O.O., with the notice, to Messrs. G. STREET and CO., Ltd., 8, Serle Street, London, W.C., not later than the 22nd of the month.

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The Editor will be glad to receive original communications upon professional subjects, travel, and personal experiences, &c. He will also be glad to receive items of news and information regarding matters of interest to the Corps from the various garrisons, districts and commands at home and abroad.

All such Communications or Articles accepted and published in the "Journal of the Royal Army Medical Corps" will (unless the Author notifies at the time of submission that he reserves the copyright of the Article to himself) become the property of the Library and Journal Committee, who will exercise full copyright powers concerning such Articles.

Matter intended for the Corps News should reach the Editor not later than the 15th of each month for the following month's issue. All these communications should be written upon one side of the paper only, they should by preference be type-written, but, if not, all proper names should be written in capital letters (or printed) to avoid mistakes, and be addressed The Editor, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, War Office, Whitehall, London, S.W.

Communications have been received from Lieutenant-Colonels A. M. Davies, W. G. Macpherson, C.M.G., M. W. O'Keeffe, C. Birt, J. J. Gerrard. Majors W. W. O. Beveridge, D.S.O., F. J. W. Porter, D.S.O., N. Manders, N. Faichnie, J. G. McNaught, H. E. Winter, E. C. Freeman, F. Smith, D.S.O. Captains K. H. Reed, J. Cowan. Lieutenants J. Fairbairn, E. L. Moss, C. Ryley.

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JOURNAL

OF THE

ROYAL ARMY MEDICAL CORPS.

Corps News.

OCTOBER, 1907.

ARMY MEDICAL SERVICE.—GAZETTE NOTIFICATIONS.

Colonel Arthur W. P. Inman, M.B., is placed on temporary half-pay on account of ill-health, dated August 14, 1907.

ROYAL ARMY MEDICAL CORPS.

The following Majors retire on retired pay, dated August 28, 1907: Ernest C. Freeman, M.D.; Alfred Wright.

Lieutenant Geoffrey Carlisle resigns his Commission, dated September 4, 1907.

Major Alfred L. Borradaile, M.B., retires on retired pay, dated September 7, 1907.

Captain Harry B. Conneil from the Seconded List to be Captain, dated August 28, 1907.

The date of the retirement with a gratuity of Captain William P. G. Graham, M.B., is November 24, 1897, and not as stated in the *Gazette* of September 13, 1898.

MEMORANDA.

Surgeon-General Sir Alfred Keogh, K.C.B., M.D., Director-General A.M.S., to be a Honorary Physician to the King, *vice* Surgeon-General A. F. Preston, M.B., dated July 24, 1907.

APPOINTMENTS.—Colonel J. M. Jones as Principal Medical Officer in Egypt. Colonel G. T. Goggin as Principal Medical Officer, Western Command. Colonel H. Martin, M.B., as Principal Medical Officer, Hong Kong. Lieutenant-Colonel S. G. Allen as Medical Officer in charge at Duke of Yorks Royal Military School, Chelsea. Lieutenant-Colonel J. R. Dodd, M.B., to charge Royal Infirmary, Dublin. Captain W. A. Ward as Specialist in Dermatology in London. Captain H. B. Fawcett as a Specialist in Bacteriology at the Royal Army Medical College. Captain W. H. S. Nickerson, V.C., as Sanitary Officer, Northern Command. Captain H. L. W. Norrington to medical charge of Military Families' Hospital, Chatham. Major S. H. Fairrie's appointment at the Families' Hospital, Shorncliffe, has been extended.

TRANSFERS.—Captain W. H. S. Nickerson, V.C., from the Irish to the Northern Command. Captain H. L. W. Norrington from the Western to Eastern Command.

TRANSFERS TO HOME ESTABLISHMENT.—Captain W. R. P. Goodwin from India. Lieutenant-Colonel S. G. Allen from India.

EXCHANGES.—Lieutenant-Colonel W. L. Reade and Major C. A. Stone. Lieutenant-Colonel H. L. E. White and Major R. J. Copeland. Captain W. B. Winkfield and Captain J. B. Cautley. Lieutenant E. J. Kavanagh and Lieutenant P. S. Stewart. Lieutenant G. B. Edwards and Lieutenant A. M. Bennett.

SELECTED LIEUTENANT-COLONELS.—Lieutenant-Colonel E. J. E. Risk and Lieutenant-Colonel W. G. Birrell have been selected for increased pay of their rank.

POSTINGS.—Lieutenant-Colonel S. G. Allen to London District. Captain J. Cowan to Eastern Command.

GOOD SERVICE PENSION.—Surgeon-General Sir T. J. Gallwey, K.C.M.G., C.B., has been awarded a Good Service Pension, vice Surgeon-General A. F. Preston, deceased. Sir T. J. Gallwey is the last officer on the active list eligible to receive a Good Service Pension.

DIPLOMA.—Captain A. L. A. Webb obtained the D.P.H. of the Royal College of Physicians and Surgeons, England.

EMBARKATIONS.—For Bermuda: Lieutenant-Colonel J. C. Culling. For Gibraltar: Lieutenant C. M. Drew. For India: Lieutenant-Colonel T. Daly, Captain L. Humphry and Lieutenant E. G. Browne.

ARRIVALS HOME ON LEAVE.—From Egypt: Major G. Dansey-Browning and Captain T. C. Mackenzie.

QUARTERMASTERS.—Quartermaster and Honorary Lieutenant R. O. Roberts died at Middelburg, Cape Colony, August 13, 1907. Quartermaster and Honorary Captain J. B. Short joined No. 18 Company for duty, August 14, 1907. Exchange between Quartermaster and Honorary Major J. Hirst and Quartermaster and Honorary Captain C. Crawley has been approved.

LIST OF CASUALTIES:—

Transfers to other Corps.—17260 Sergeant G. W. Payne to Colonial Government, Northern Nigeria: 17267 Private L. H. King to Scots Greys.

Discharges.—7572 Quartermaster-Sergeant J. W. Lockwood, termination of second period; 10119 Staff-Sergeant W. H. Timbrell, free after fourteen years; 17912 Sergeant J. H. Hiatt, termination of engagement; 7582 Sergeant A. Miller, termination of second period; 8081 Corporal G. Archer, termination of second period; 8527 Corporal F. Burr, termination of second period; 7570 Corporal G. T. O. Rock, termination of second period; 8080 Corporal A. J. Sims, termination of second period; 10237 Corporal J. Scott, medically unfit; 522 Private C. W. J. Chambers, medically unfit; 11420 Private E. McCormack, termination of second period.

Transfers from other Corps.—6001 Staff-Sergeant G. Ellison, from Stafford Volunteer Infantry Brigade Bearer Company; 10119 Staff-Sergeant W. H. Timbrell, from Transvaal Volunteers; 13856 Sergeant R. J. McKay, from Colonial Government, Northern Nigeria; 1153 Private S. J. Cox, from 3rd Middlesex Regiment; 1154 Private S. E. Hodge, from 4th Rifle Brigade; 1203 Private A. W. Foweraker, from 6th Dragoons.

Deaths.—17642 Private T. King, at York, on August 18, 1907; 165 Private W. McCormack, at Caterham, August 23, 1907; 19653 Private H. S. Tomlinson, at Portsmouth, August 26, 1907.

Embarkations for Abroad.—To Sierra Leone, per s.s. "Axim," September 9, 1907: 19046 Corporal S. J. Phillips; 18940 Private P. H. Musgrave; 18061 Private W. Cairns.

To Bermuda, per s.s. "Soudan," August 29, 1907: 9245 Staff-Sergeant H. Cassell; 18248 Lance-Corporal W. Johnson; 18000 Private J. Payne; 19380 Private C. H. Down; 19718 Private F. Brain.

To Colonial Government, Northern Nigeria, August 31, 1907: 17260 Sergeant G. W. Payne.

Disembarkations from Abroad.—From Bermuda, per s.s. "Ocamo," August 17, 1907: 19056 Private J. Shelton.

From South Africa, per s.s. "Guelph," September 2, 1907: 14326 Corporal W. P. S. Morman.

Transfers to Army Reserve.—578 Private W. H. Bonson, 526 Private E. McDermott, 546 Private R. Walsh, 548 Private A. McDougall, 549 Private J. Leacy, 555 Private J. Neal, 19169 Private F. Chittendon, 538 Private F. H. Nicholls, 547 Private W.

Sephton, 562 Private G. Webster, 537 Private J. Dougan, 553 Private E. Wingfield, 539 Private J. A. Russell, 552 Private W. T. Driscoll, 557 Private W. Garrett, 550 Private A. Reith, 574 Private T. Powers, 534 Private H. J. Allen, 535 Private R. Black, 545 Private W. Beattie, 558 Private R. Aitkinson, 577 Private J. Auld, 551 Private D. A. Leitch, 563 Private C. H. Stevens, 565 Private J. T. Robson, 566 Private P. McManus, 568 Private J. W. Cairns, 572 Private F. Bell, 575 Private J. Duffy, 567 Private J. Huntley, 576 Private P. Vickery, 579 Private H. Dudley, 573 Private F. E. Antcliffe, 591 Private G. E. Herbert, 592 Private H. Woodhead, 19184 Private F. O'Connor, 12737 Private H. Dawson, 587 Private L. Kendrick, 588 Private O. Mellon, 580 Private J. Higgins, 19187 Private C. V. Hunt, 16329 Private G. Cochran, 593 Private H. Limcock, 564 Private J. Burbidge, 19191 Private F. W. Pinnock, 595 Private D. Thomas, 19902 Private R. T. Crampton, 19968 Private C. H. E. Bullock, 14479 Private H. Chapman, 594 Private J. Reedman, 601 Private J. Hunter, 602 Private B. Davies, 603 Private H. Brady, 604 Private T. Tighe, 605 Private J. Fitzgerald, 613 Private P. Wright, 11496 Private T. Holland, 622 Private J. Smith, 620 Private E. Moore, 632 Private J. H. Vince, 629 Private J. Birch, 630 Private F. Riley, 607 Private J. Greenwood, 612 Private J. Hughes, 621 Private H. Hardiment, 628 Private F. Ashbury, 615 Private T. Burke, 12515 Private J. Shepherd, 611 Private J. McGuigan, 606 Private H. O'Hara, 631 Private J. Robbins, 633 Private H. Carr, 640 Private A. Nixon, 19209 Private W. Sharpe, 623 Private A. J. C. Peake, 634 Private W. Fisher, 635 Private P. J. Jennings, 636 Private F. G. Lewis, 637 Private F. Loosely, 638 Private D. G. Waldron, 639 Private C. H. Thomas, 641 Private J. Kilgallon, 642 Private E. Driscoll, 643 Private F. Cale, 644 Private M. A. Gardner, 647 Private H. F. Lloyd, 663 Private J. Campbell, 651 Private W. Meek, 652 Private T. Mullanay, 646 Private J. McDougall, 19225 Private W. Thompson, 657 Private F. T. Bone, 658 Private J. Hedges, 654 Private D. Ryan, 653 Private J. Welsh, 665 Private W. Whyte, 661 Private J. M. Crombet, 650 Private J. Sweeney, 649 Private W. Wilkie, 656 Private A. Tatlow, 655 Private J. Bignall, 17220 Private E. J. Piercey, 19226 Private A. Young, 666 Private R. Jordan, 676 Private S. H. Trower, 680 Private F. Jones, 688 Private J. Radford, 690 Private A. Finnegan, 19221 Private J. Dempster, 693 Private H. J. Cartwright, 683 Private J. Leathem, 689 Private P. F. Coffey, 695 Private W. Sweet, 685 Private J. Dabbs, 703 Private G. Brown, 12527 Private J. Ryan.

THE FOLLOWING NON-COMMISSIONED OFFICERS AND MEN HAVE QUALIFIED FOR PROMOTION IN THE VARIOUS CORPS EXAMINATIONS, &C.

For Quartermaster-Sergeant.—8417 Staff-Sergeant J. Davis, 9722 Staff-Sergeant W. J. Tite.

For Staff-Sergeant.—9632 Staff-Sergeant J. Baxter, 10912 Sergeant J. H. McMahon, 10710 Sergeant J. Moore, 11590 Sergeant J. T. Starkie, 11059 Sergeant J. Dunn, 10590 Sergeant J. W. Elliott, 17759 Sergeant J. Black.

For Sergeant.—9936 Staff-Sergeant H. Allwork, 9404 Sergeant A. Lovett, 10598 Lance-Sergeant P. G. Knightley, 15001 Lance-Sergeant W. Hurst, 11417 Corporal A. Bush, 18970 Corporal J. Higginbottom.

For Corporal.—16482 Private W. C. Leppington, 18833 Private R. Crook, 19237 Private W. Naylor, 16130 Private W. Lacey, 19734 Private H. F. Peters, 14693 Private F. W. Kay, 18498 Private E. R. Ross, 11728 Private W. White, 19802 Private A. Leakey, 19820 Private H. W. Stagg, 19763 Private A. J. Luxon, 751 Private A. J. Milne, 12411 Private A. A. Sims, 17244 Private A. F. McArthur 11382 Private A. Nunn, 18964 Private G. W. Herbert, 19444 Private H. A. Jones, 18991 Private S. Crowder, 19279 Private H. E. Mars, 19812 Private F. P. Barron.

NOTES FROM ALDERSHOT: *Royal Army Medical Corps, The Annual Athletic Meeting.*—The annual sports of the Corps, held on the Regimental Ground, were most interesting and, as usual, attracted a very large gathering of spectators of all ranks to the enclosures, arranged with great skill and taste around the ground. The programme contained over thirty events, all of which were contested with great spirit. In most of the events the Militia companies under training in Aldershot competed, whilst there were several events open to the Corps at all stations. The officers entertained in their customary hospitable manner, the interior of the huge marquee erected in their enclosure presenting a pretty picture, the floral decorations being most charming, reflecting all credit on the taste of Mr. and Mrs. Paxman. At the conclusion of the sports the prizes were presented by Mrs. Anderson, wife of Colonel L. E. Anderson, No. 1 Company, in the absence of Lady Gallwey. The band of the Corps, under the

direction of Mr. T. W. Bennett, played an excellent programme of music during the afternoon, while there was plenty of amusement afforded by the antics of the party of clown policemen and the Pierrot Troupe who played in the enclosures. The President of the Committee responsible for the arrangements was Lieutenant-Colonel L. E. Anderson; Lieutenant-Colonel T. O'H. Hamilton, C.G.M., was the referee; Major E. B. Steel was the starter, Major E. T. Birrell was the Secretary, and Staff-Sergeant Coggan acted as clerk of the course. To the latter is due most of the credit for the excellent arrangements of the course and ground.

The principal interest was centred in the contests for the Johnson Mile-Racing Challenge Cup, which was won by Private Stubbington, No. 11 Company. Representatives from several stations competed for it, and the Corps Challenge Shield and

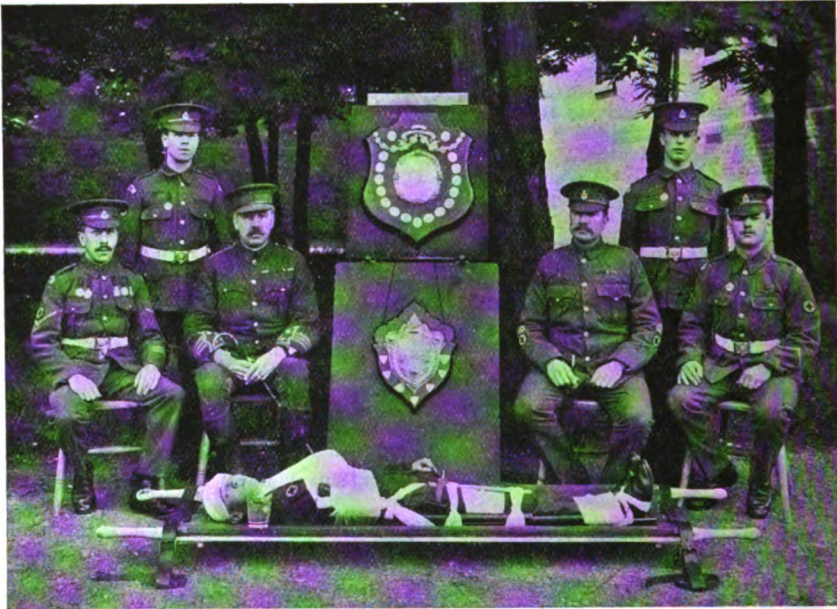


Photo by Gale and Polden, Limited, Aldershot.]

THE TEAM THAT WON THE CHALLENGE SHIELD.

medals for stretcher work, which has again been won by No. 1 Company, trained by Corporal Pell. The results were as follows:—

Throwing the Cricket Ball.—1, Private Sparks, 102 yards; 2, Private Marston, 96 yards 2 feet.

Putting the Shot.—1, Private Mann, 28 feet 8 inches; 2 Corporal Sproule, 28 feet 6 inches; 3, Private Price, 27 feet.

Two Miles Walking Race.—A dozen started, the event being open to the Corps at all stations: 1, Private Fenwick, Netley; 2, Private Rogers, Aldershot; 3, Private Wright, C Company. Won by 3 yards, 50 yards dividing second and third.

Football Kicking.—There were nearly a score of competitors in this event, which was won by Private Price, the regimental goal-keeper, with a kick of 157 feet 8 inches; Private Tipping, the half-back, was second with 156 feet.

220 Yards for Privates.—1, Private Diamond; 2, Private Cooney; 3, Private Fewtrell. Eight started. Won by 2 yards, a close third.

High Jump.—1, tie, Privates Hamilton and Price, 4 feet 9 inches. On jumping off the tie for points Private Price won by an inch.

Veteran's Race, 100 Yards.—1, Private Stilling; 2, Private Lee; 3, Private Dever. Won by a few inches, with a good third placed man.

Long Jump.—1, Private Price, 18 feet 2 inches; 2, Corporal Sproule, 17 feet 11 inches.

100 Yards, all Ranks.—1, Private Cooney; 2, Private Diamond; 3 Lance-Corporal Ranford. Won by a foot, a yard dividing second and third.

200 Yards for Corporals.—1, Corporal Miller; 2, Lance Corporal Ranford; 3, Lance-Corporal Harvey. Won by 4 yards, a close third; a dozen turned out.

Hurdle Race, 8 Flights.—1, Sergeant McKenzie; 2, Private Cartright; 3, Private Ball. Won by 3 yards, the same distance separating second and third.

Buglers' Boot Race.—1, Boy Quelch; 2, Boy Holden; 3, Boy Rolfe.

Quarter Mile, open to the Corps at all Stations.—Seventeen started, Corporal Kay, Dublin, getting an early start, which he maintained to the tape, Corporal Miller, Aldershot, endeavouring to contest him in the straight, but failed by 2 yards, Private Cooney, Depôt, being third, 10 yards to the bad. A good race.

Children's Race.—Boys: 1, R. Harvey; 2, Mick Smith; 3, T. Coad; 4, W. Bullock. Girls: 1, E. Malcolm; 2, N. Lovell; 3, K. Steer; 4, E. Smith.

One Mile, open to the Command.—Eight faced the starter, Private Willis, 2nd Grenadier Guards, the Army champion, taking the lead in the first lap, and with Gunner James, Royal Garrison Artillery, quickly placing a long gap between themselves and the rest of the field. James took the lead in the third lap, but could not get away from Willis, who shot to the front in the last lap and, striding away, won by 12 yards, James being second, and Bandsman Brook, 1st Leinster Regiment, and Private Small, 1st Yorks Regiment, dead heat, third, 20 yards behind.

Half-Mile, open to the Corps at all Stations.—Thirteen started, the field keeping in a bunch till the last lap, when Lance-Corporal Penny, No. 1 Company, went clean away from the field and won by 15 yards in splendid style; Private Farrow, No. 1 Company, being second, and Corporal Miller, Depôt, third, 5 yards to the bad.

Sack Race.—After several heats had first been run, the final resulted in a victory for Boy Quelch; 2, Private Denvers; 3, Boy Bardwell.

Ladies' Egg and Spoon Race.—1, Mrs. Aldridge; 2, Mrs. Coggan; 3, Mrs. Edser. Won amid much amusement by a few inches.

One Mile, open to the Corps at all Stations, for the Johnson Challenge Cup.—Eight started: 1, Private Stubbington, Dover; 2, Private Cooney; 3, Private Harvey.

Tug-of-War, Final.—In the first round No. 1 Company beat No. 3 Company, and then defeated A Company. B Company beat the Militia Company in the first round, and then defeated C Company and No. 2 Company. In the final No. 1 Company beat B Company by 2—1, under the able coaching of Sergeant Hart.

Company Relay Race.—Four teams competed, the No. 1 of each team having to run one lap, the No. 2 two laps, and the No. 3 three laps. No. 1 Company led all through up to within a hundred yards of the tape, when B Company representative, Corporal Miller, sprinted and won by 10 yards, No. 1 Company being second, and No. 2 Company being third. The winning team comprised Private Cooney, Private Rogers, and Corporal Miller.

120 Yards' Race, for Officers.—A capital race was won by Colonel Bond, Lieutenant Robinson being a close second.

Slow Bicycle Race.—1, Private Rogers; 2, Boy Smith; 3, Boy Peacock.

Boot Melee.—1, Private Barnes; 2, Boy Holden; 3, Boy Bardwell.

Obstacle Race.—1, Private Cartwright; 2, Private Fewtrell; 3, Private Eldrett. Won by 8 yards, same between second and third.

Warrant Officers' and Sergeants' 220 Yards Handicap.—1, Sergeant Ward, 17 yards' start; 2, Sergeant Pugh, scratch; 3, Sergeant Wiun, scratch. Won by 8 yards in fine style. This makes the sixth year in succession that Sergeant Ward has won this event.

Consolation Race.—1, Private Perkins; 2, Private Mills; 3, Private Morrison. Won by 8 yards.

Reveille Competition.—Six teams of four in marching order had to pitch and strike tents, a good contest resulting in a victory for A Company, No. 1 Company being second.

Royal Army Medical Corps Challenge Shield for Stretcher Work.—Four stretcher teams competed, being required to double 100 yards, dress a patient for a shot wound in the chest and fractured leg, and carry him back to the starting-point, a glass of water being carried on each stretcher-pole to test the steadiness of carrying. Corporal Pell's No. 1 Company team worked splendidly. They did everything according to the Manual, and although they were the last away from the starting point, they were the

first home with their patient, whilst the glass of water being carried on the stretcher was brim full when they reached the winning-post, not a drop being spilled. The manner in which they had bandaged their patient was better than the others, so it was no surprise to hear that they had won. A Company's team was very thorough in their dressing. They applied their dressings to the actual flesh, ripping out a coat sleeve and the seams of the clothing before dressing. This was not necessary for the purposes of the competition, but it showed a commendable thoroughness on their part. A Company was second, and B Company third. The winning team, coached by Corporal Pell, comprised Privates May, Hodges, Baigent, and Weeks. Through the courtesy of Messrs. Gale and Polden, we are able to reproduce photograph of the winning team.

The Challenge Cup for the competitor making the highest number of points in the various events was awarded to Private Price, who shared the prize with Private Rogers, who tied with him in points.

Major E. B. Steel, R.A.M.C., writes (September 6, 1907) :—

"ANNUAL SHOOT.

"The Depot and Sergeant's Royal Army Medical Corps Rifle Clubs held their annual meetings on Ash Ranges, on August 9 and 22 respectively. On both occasions the weather was all that could be desired, and the conditions most favourable for good shooting. The competitions were keenly contested throughout, and the marksmanship generally was very satisfactory; the most notable performance being that of 2443 Private Papworth, the oldest soldier in the Corps, who in the Old Soldiers' competition made 93 out of a possible 105. There were very few entries for the Young Soldiers' competition, this class apparently taking much less interest in rifle shooting since its abolition from the recruits' course at the depot.

RESULTS.

Depôt, R.A.M.C., Annual Rifle Meeting.

<i>Officers.</i>		<i>Privates.</i>	
(1) Lieut. and Qmr. A. Wheeler ..	88	(1) Private Papworth	93
(2) Major E. B. Steel	76	(2) " Pollington	89
<i>W.O.'s, Staff-Sergeants and Sergeants.</i>		(3) " Burgess	68
(1) Staff-Sergeant Fletcher	89	(4) " Higgins	67
(2) Sergeant Hinton	82	<i>Young Soldiers.</i>	
(3) Staff-Sergeant Hasler	78	200 and 500 yards only.	
(4) Sergeant Merchant	73	(1) Private Yates	52
<i>Corporals.</i>		(2) " Love	43
(1) Lance-Corporal Chappell	69	<i>Challenge Shield.</i>	
(2) " Ryder	68	(1) Sergeant Ford	77
(1) Sergeant Hinton	90	(8) " Glenn	76
(2) " Gregson	88	(9) Lance-Corporal Chappell	75
(3) Lieut. and Qmr. A. Wheeler	87	(10) Sergeant Merchant	72
(4) Major E. B. Steel	85	(11) Private Pollington	72
(5) Staff-Sergeant Fletcher	81	<i>Sergeants, R.A.M.C., Annual Rifle Meeting.</i>	
(6) Private Papworth	80	<i>Hammerton Cup.</i>	

<i>Hammerton Cup.</i>		<i>Lilywhite Cup.</i>	
(1) Staff-Sergeant Fletcher	90	(1) Sergeant Hinton	84
(2) Sergeant Hinton	90	(2) " Merchant	82
(3) Staff-Sergeant Porter	81	(3) Staff-Sergeant Hasler	80
(4) Sergeant Coad	75	(4) Sergeant Coad	80
(5) " Gregson	73	(5) Staff-Sergeant Fletcher	73

Special Prizes (given by J. H. West).

<i>Hammerton Cup. Best score at 200 yards :—</i>	
Staff-Sergeant Porter	31
<i>Lilywhite Cup. Best score at 600 yards :—</i>	
Sergeant Merchant	28
<i>Aggregate Prize for Cup Competitions :—</i>	
Sergeant Hinton	174

"*Swimming*.—This summer twice a week a voluntary bathing parade at the swimming bath has been sanctioned for the men at the dépôt, and for the encouragement of swimming, prizes have been given for swimming and diving. A large number of entries resulted, and the final results were as follows :—

100 yards.	$\frac{1}{4}$ mile.	Diving.
(1) Private Wilkins.	(1) Private McLachlan.	(1) Private King.
(2) " McLachlan.	(2) Boy Ranger.	(2) " Wilkins.
(3) Boy Ranger.	(3) Private Crooke.	(3) Boy Haigh.

"All the heats were well contested, but unfortunately, before the arrival of the date of the finals, some of the best performers, although qualified for various finals, had left for other stations. In the absence of the Officer Commanding Dépôt Royal Army Medical Corps, Major J. D. Ferguson, D.S.O., presented the prizes to the various successful competitors, personally congratulating many of them on their success.

"*Football*.—At a general meeting of the Royal Army Medical Corps Football Club, held in the R.A.T.A. Room on September 4, it was decided to run two teams this season instead of one as last season. The senior team have entered for the Senior Military League, and the reserves for the Junior Military League. The office bearers for the season are: Private Price, Captain, and Private McCaffery, Vice-Captain, of the seniors; and Corporal Keeble and Private Spence, Captain and Vice-Captain respectively of the junior team. The seniors entered a six-a-side team for a competition got up by the Farnborough Football Club, and proved victorious with considerable ease, defeating the Army Service Corps, West Yorks and Scottish Rifles. There is every prospect of a most successful season, as in addition to having practically all last year's side, we have several fine players who have joined from South Africa. It is with the greatest regret that we have to announce that Lieutenant and Quartermaster Painton has resigned the Secretaryship of the Club, which he has held so long and with such marked success. An able successor has, however, been found for the post in Captain J. D. G. Macpherson, who has been running the Corps cricket for the past three years with considerable success."

NOTES FROM LICHFIELD.—Lieutenant W. G. Aviss, R.A.M.C., writes (September 9, 1907): "A Corps Recreation Club has lately been started for the non-commissioned officers and men. They have, amongst other things, two excellent tennis courts in the hospital grounds. Life at this station is fairly festive. There is plenty of tennis and good golf on practically private links. Cubbing started this week. The West Riding Regiment gives a dance on the 12th.

"The officers stationed here at present are Lieutenant-Colonel Brazier-Creagh, C.M.G., Captain Goldsmith and myself. Lieutenant Bell has departed to Scarborough."

NOTES FROM SCOTLAND.—Capt. V. J. Crawford, R.A.M.C., writes (September 23, 1907): "The training season is now finished. All the camps are closed, with the exception of the one for the Militia at Lanark, which will remain open till about September 24. Lieutenant Sim is in charge of the Field Hospital. On the closing of this camp, Lieutenant Sim is to proceed to Berwick-on-Tweed, to assume temporary charge of the hospital there.

"Captain Mackessack, Captain Churton, Lieutenant Lunn and Lieutenant Wood have either taken part or will take part in staff rides this month, one in the neighbourhood of Perth, the other in Lanark.

"Several officers in the command are keen golfers, and we will soon be able to get a team together."

Sergeant-Major G. H. Roberts, R.A.M.C., writes (August 17, 1907): "A part of No. 13 Company, Royal Army Medical Corps, were engaged at Stobs, near Hawick, North Britain, from August 5 to 15, in field training, consisting of carrying out the duties required of Section 'A' Field Ambulance. The *personnel* comprised Lieutenant-Colonel W. G. Birrell, Commanding Officer, Captain R. H. Lloyd, Lieutenant E. S. Fortescue, Lieutenant and Quartermaster R. P. Macintosh and Sergeant-Major G. H. Roberts, fifty-eight non-commissioned officers and men, Royal Army Medical Corps; nineteen of the latter were recruits from Aldershot, the remainder consisting of small drafts taken from various hospitals in the Scottish Command. The work carried out by the Unit proved most interesting and instructive to all concerned, and would have been more so, had favourable weather been experienced. Stobs has received a reputation for bad weather, but I think all records were broken during our stay, for it was

raining nearly the whole period, thereby rendering our camp a perfect quagmire. Colonel T. M. Corker, Officer Commanding Royal Army Medical Corps, Scottish Command, who witnessed the work carried out by the Unit on August 14, complimented Lieutenant-Colonel W. G. Birrell, officers, warrant officer, non-commissioned officers and men on the smart and efficient manner in which all concerned carried out their duties that day. He said—'considering the short period the Unit had been together, and that the *personnel* had been drawn from various sources, he had never seen work better done.' The non-commissioned officers and men left for their stations on the 15th inst., except seven men ordered to Fermoy for duty.

"Of sport we had very little: one cricket match was played with No. 8 Company, Army Service Corps, who defeated us by the narrow margin of 12 runs."

NOTES FROM THE WEST COUNTRY.—Major R. J. Blackham, R.A.M.C., writes (September 19, 1907): "Captain G. D. Bourke, C.B., was Principal Medical Officer of the Northern Force at the recent Salisbury Plain manoeuvres. Lieutenant-Colonel R. Caldwell, Specialist Sanitary Officer, accompanied him as his Staff and Sanitary Officer. Major W. L. Gray was Administrative Medical Officer and Medical Officer in charge of the Section Clearing Hospital of the Cavalry Brigade. His staff consisted of Captain Prescott, D.S.O., Lieutenant J. W. L. Scott, and N.C.O.'s and men from Devonport under the charge of Staff-Sergeant Darke. Lance-Corporal R. W. Cole and Private G. W. Walker were P.M.O.'s clerk and orderly respectively. Several N.C.O.'s and men from this district were detailed for duty as water-cart orderlies with various corps. The medical arrangements for the troops under Colonel Bourke's charge worked without a single hitch.

"Lieutenant-Colonel J. M. Jones embarks for Egypt on 25th inst. to take up the appointment of P.M.O. in the Land of the Pharaohs. Lieutenant-Colonel M. Dundon is in temporary charge of Military Hospital, Devonport, pending the appointment of a Lieutenant-Colonel arriving from abroad. Major A. Wright has retired, but continues in medical charge of the troops at Falmouth. Captain J. J. W. Prescott, D.S.O., Specialist in Ophthalmology, goes to Dublin shortly in exchange with Captain Archer, who will replace him in the Specialist appointment here.

"Staff-Sergeant Carnell and Private Evans have gone to Mauritius, Privates Haskins and Pollitt to South Africa, and Privates Brownsell and Thain to Malta. Lance-Corporal R. W. Cole and Private G. W. Walker are under orders to embark on October 31 for Hong Kong. Corporal J. I. Burns, Hon. Secretary of the Cricket Club, has gone to London to undergo a course of instruction as laboratory attendant.

"No. 7 Company Cricket Team has been fairly successful during the season, and has more than held its own with all regiments and corps in the garrison. There is, however, not much prospect of a successful football season this year, owing to many one-year men going to the reserve, and a very large number of other casualties."

NOTES FROM WOOLWICH.—Lieutenant-Colonel J. S. Davidson, R.A.M.C., writes (August 16, 1907): "On the 27th ultimo a very successful 'At Home' was given by Lieutenant-Colonel Wardrop and the officers, Royal Army Medical Corps, in the grounds of the Royal Herbert Hospital, to the representatives of the garrison and their other friends. Some 300 guests assembled, and in perfect weather spent a most enjoyable afternoon. The selections played by the Royal Army Medical Corps band under the supervision of Mr. Bennett were much appreciated. Among the extraneous attractions the following were provided: In the hospital theatre the 'Tatlers' Troupe' gave an entertainment which was largely attended. Another popular resort was the lady palmist's tent. Here, besieged by the ladies, who, while highly appreciating the present turned a wistful eye to the future, she foretold what the fates had in store for her fair clients. Later, in the adjacent field, there was a display of Japanese fireworks. The grotesque figures which issued from these fireworks, representing an aerial zoological garden, was a source of much amusement, not only to the guests, but also to an appreciative audience of Young Woolwich, who scrambled for the remains of the paper monkeys and other animals which were wafted towards Shooters Hill. The catering was admirably done by Messrs. Buzzard and Company.

"Since the first week of this month a large proportion of Nos. 12 and 34 Companies have left for the manoeuvres. No. 1 Woolwich Company, Royal Army Medical Corps Militia, is at present training in the Royal Herbert Hospital as well as 'H' Bearer Company, St. John's Ambulance Brigade.

"*Sergeants' Mess.*—The annual outing of the Sergeants' mess was held on Saturday, July 20, 1907, under most favourable climatic conditions. The party drove in brakes to Wrotham, which was the rendezvous selected. Practically the whole of the members

of the mess, their wives and families were present. After luncheon sports were held for the amusement of the children, to whom prizes were distributed. This was one of the most successful outings held for some years past."

NOTES FROM MALTA.—Major C. E. Pollock, R.A.M.C., writes (September 11, 1907):—

"The most note-worthy event has been the 'At Home' given by the Sergeants' Messes of Valletta and Cottonera Hospitals, of which I send you the account published by the *Daily Malta Chronicle* of August 24, 1907.

"I regret not being able to send you a list of victories achieved by the Corps team, as sad to say there was none this month.

"Our Principal Medical Officer, Colonel J. G. MacNeece, and Major G. S. Crawford, our Sanitary Officer, have both proceeded on short leave.

"Our first storm came off to-day, and was welcomed as the herald of cooler weather.

"Thanks to the continued use of tiuned milk we have had no further admissions from the Corps for Malta fever.

"ROYAL ARMY MEDICAL CORPS.

"The beautiful grounds outlying the Cottonera Hospital, were brightened in loveliness and animation on the occasion of the annual 'At Home' given on Thursday afternoon by the members of the Sergeants' Messes of Valletta and Cottonera Hospitals, and which may be described, in its relation to similar out-door gatherings, as the event of the season. And in this conclusion there can be no second opinion. The Sergeants of the garrison are noted, and deservedly so, for the elegance and liberality with which they dispense their hospitality, but there are favouring circumstances usually attending the annual 'At Home' of the Royal Army Medical Corps, which give the entertainment an interest of its own. The union of effort on the part of the Sergeants of both Hospitals, is a weighty feature in the attainment of success, but the enjoyment lies principally in the position which is at their disposal, for it would be hard to find on the Island a more charmingly salubrious site than that which is afforded in the grounds of the hospital, so prettily situated on the Zabbar heights. The weather conditions of Thursday were particularly agreeable; a light breeze tempering the heat, which was excessive in the city.

"From 3 o'clock p.m., and upwards, the launches and boats carried large consignments of guests from the Valletta side to San Lorenzo Steps, whence they proceeded to Cottonera Hospital in a continuous stream of vehicles. A hearty welcome awaited them at the hands of Sergeant-Major Barton, R.A.M.C., Valletta, and Mrs. Barton, and Sergeant-Major Dudman, R.A.M.C., Cottonera, and Mrs. Dudman, who discharged the pleasing duty of receiving the guests in a manner which was highly appreciated. Amongst those present were: Colonel Sloggett, Colonel Daly, Colonel Rhodes, Captain Winder, R.A.M.C.; Captain Mifsud, R.M.A.; Captain Lines, Captain Allen, R.A.M.C., Lieutenants Winckworth, Lloyd-Jones, Maughan, Meredith, Roberts, Marett, R.A.M.C.; Lieutenant Ramsay, R.G.A.; Lieutenant Rafferty, Connaught Rangers; Miss Wilson, Matron and Sisters Q.A.I.M.N.S., and other ladies. The general company, numbering over three hundred, comprised the Warrant Officers, Staff-Sergeants and Sergeants of the Regiments, Corps and Departments in garrison, Royal Navy, and a few civilian friends, their wives and children.

"By kind permission of Lieutenant-Colonel K. D. Chamier and officers, the band of 1st Bn. Connaught Rangers was in attendance and played the following programme during the evening, under the able baton of Mr. J. S. Keely.

"March Suite	(1) 'Remembrances'; (2) 'Wellington'	VARIOUS
"Overture	'Le Duc d'Orlonne'	AUBER
"Selection	'The Geisha'	JONES
"Valse	'Gold and Silver'	LEHAR
"Serenata	'Love in Idleness'	MACBETH
"Selection	Sullivan's Songs	SULLIVAN
"Patrol	'U.S. America'	COXMOORE
"Selection	'The Cingalee'	MONKTON

"As the guests mustered strong, the enjoyment increased to prodigious proportions. Tennis was the order of the day, and some fine play was witnessed, in which the gentle sex utterly routed their sterner opponents. In vain did they strive to obtain the upper hand, but—as usual, they were defeated. Game after game only completed

their discomfiture, until nothing remained but an honourable surrender, amidst much merriment. Meanwhile, games of sorts were being indulged in according to fancy. There was a shooting gallery in which Bisley records were badly beaten. Here the ladies also distinguished themselves. Then there were 'Ping Pong,' 'Darts,' 'Quoits,' and innumerable other diversions which had their respective patrons. As for the little ones, it was evidently their day out, and it did one's heart good to see them crowding the swings, playing hide and seek in the bushes, and romping about in all directions.

"At 5 o'clock, tea was served in a spacious marquee. It must have been a severe strain upon the resources of 'Blackley's' establishment, but Mr. Morris was equal to the occasion. The first hundred having been satisfied, the second hundred were likewise disposed of without any appreciable diminution in the commissariat. Another hundred had yet to come, and these having enjoyed an equal share of the good things provided, there was a return to the grounds, where the games were resumed. The little children were, of course, favoured participants in the feast, thanks to the unceasing attentions of Mrs. Barton and Mrs. Underwood, who assisted at the tea-table, and who served their tiny guests with cakes and sweets in such abundance that they had no alternative but to put them in their pockets. And here it will be appropriate to pay a deserved tribute to the Committee, composed of Staff-Sergeant Hunt, as President, Staff-Sergeant Rossiter, Staff-Sergeant Underwood, Sergeant McClelland and Sergeant Davis.

"With such a combination of energy and intelligence it was only to be expected that everything would go as merry as a marriage bell, and in this respect there was nothing more to be desired. Each of the committee-men had their allotted office, and it would be difficult to say which of them deserved the most praise for the efficient discharge of their responsibilities—some accord it to Staff-Sergeant Hunt, but it is hardly fair to particularise where so much merit was in evidence. After a brief respite, which was very easily dispelled amidst such pleasant surroundings, the grounds having meanwhile been transformed into a veritable fairy-land, with acetylene lights, coloured lamps and lanterns, Mr. Fenech's orchestra opened a programme of dances, and soon the devotees of terpsichore were in the full enjoyment of their hearts' desire.

"At 9.30 o'clock supper was served and heartily partaken of. Sandwiches, ices, minerals, &c., went round in abundance, while the orchestra played selections. But everything has an end, even 'At Homes,' and it was regretted that the fleeting hours had brought the reception to a close, as announced in the playing of 'God save the King.' Reluctant partings were exchanged, and hearty assurances given to the hosts by their gratified guests, that it was the best evening they had spent in Malta."

NOTES FROM NAIROBI, BRITISH EAST AFRICA.—Quartermaster R. Stanley, R.A.M.C., writes (August, 1907):—

"His Majesty the King has approved the selection of Lieutenant-Colonel J. Will, Principal Medical Officer East Africa and Uganda Protectorates, as a member of the new Legislative Council for British East Africa. The *Advertiser* of East Africa says concerning the appointment: 'In tropical climes, more especially, the medical department is one of the most frequently consulted, and, perhaps, the most important. Few are the questions upon which the advice of the head of this department is not needed. The untiring energy and great capability shown by Lieutenant-Colonel the Hon. J. Will, have gained for him much popularity, and we cannot imagine any cavil at his appointment.' I believe Lieutenant-Colonel the Hon. J. Will is the only officer of the Corps holding a position as a member of the Legislative Assembly of any British Colony, and consequently is to be congratulated, and the unique distinction is worthy of chronicle."

NOTES FROM SIMLA, INDIA.—Lieutenant-Colonel H. B. Mathias, D.S.O., Officiating Secretary to the Principal Medical Officer, His Majesty's Forces in India, writes (August 15, 1907):—

"*Appointments.*—In connection with the abolition of commands the following further appointments and changes take place as regards Royal Army Medical Corps officers: Surgeon-Generals F. W. Trevor, C.B., and W. B. Slaughter, are appointed Principal Medical Officers of the 6th and 8th Divisions respectively; Colonel Whitehead goes as Principal Medical Officer to Sirhind Brigade, and Colonel Leake in a similar capacity to the Allahabad and Fyzabad Brigades (a new creation). The Principal Medical Officer, His Majesty's Forces in India, will in future nominate

officers to command station hospitals at all divisional and brigade headquarters, the tenure in the majority of places being for three years, which may be extended. He will likewise nominate officers to the more important hill stations; these appointments will be for two years, which cannot be extended. The following Royal Army Medical Corps officers have been appointed Staff Officers for medical mobilisation stores: 2nd Division, Major L. P. More; 6th Division, Captain J. F. Martin; 9th Division, Major A. E. Milner.

"Majors M. Boyle and J. Grech, and Captain A. H. Waring proceeded on 1st instant to Dehra Dun for the purpose of undergoing a course of *practical* instruction in the working of the X-ray apparatus which has been adopted for the Army in India, with special reference to its use on field service.

"*Specialist Appointments.*—The following Royal Army Medical Corps officers are appointed specialists in India only in the undermentioned subjects, under the terms of Indian Army Order No. 307 of July 1, 1907: (a) *Dermatology*—2nd Division, Lieutenant H. T. Wilson; 3rd Division, Major C. W. Profeit; 6th Division, Captain J. S. Gallie; 9th Division, Captain M. M. Rattray. Captain R. Selby, who is already qualified under the conditions laid down by the Army Council, is employed in the 7th Division. Increased attention is now being paid to this important subject (Dermatology), and it is proposed to form classes at Ambala during the winter months for the instruction of such officers as may wish to improve their knowledge. (b) *Advanced Operative Surgery*—1st Division, Lieutenant C. W. O'Brien; 2nd Division, Lieutenant C. H. Turner; 5th Division, Major F. W. Begbie; 8th Division, Captain W. L. Steele; Burma Division, Captain T. J. Wright. Major K. M. Cameron and T. H. Goodwin, D.S.O., already qualified under the conditions laid down by the Army Council, are employed in 3rd and 4th Divisions respectively. There are now first-class operating rooms at all the important stations, and improvements are gradually being effected in the fittings, instruments, &c.

"*Leave.*—Major A. J. Luther is granted six months' leave *ex India* on private affairs from June 30, 1907. The following officers have been granted extension of medical certificate leave out of India: Lieutenant-Colonel A. S. Rose, three months, from October 10, 1907; Lieutenant-Colonel F. R. Newland, from August 16, 1907, to October 15, 1907; Captain R. H. Bridges, from August 8, 1907, to November 7, 1907; Captain M. C. Wetherell, from August 1, 1907, to August 31, 1907.

"*Standing Committee on Enteric Fever.*—The next meeting of the Standing Committee on Enteric Fever will be held at Simla on Wednesday, October 16. Lieutenant-Colonel D. O'Sullivan, R.A.M.C., has been appointed a member, *vice* Captain L. W. Harrison, proceeding to England tour-expired."

NOTES FROM WYNBERG, CAPE COLONY.—Sergeant-Major Kinsella, R.A.M.C., writes (August 19, 1907):—

"We have to regret the loss by sudden death of Lieutenant and Quartermaster R. O. Roberts, which occurred at Middelburg, Cape Colony, on 13th inst. The deceased was leaving the hospital compound in a Cape cart when, on crossing a spruit, the driver was thrown out, and the mule taking fright bolted. Mr. Roberts endeavoured to alight from the vehicle, but was thrown and sustained a fracture of the base of the skull, causing his death. The whole Middelburg garrison attended the funeral. Deceased leaves a widow and daughter to mourn his loss, and had intended going home in October to retire from the Service.

"Lieutenant-Colonel N. C. Ferguson, C.M.G., has been appointed Administrative Medical Officer of the Northern Force for the forthcoming manœuvres, and Captain F. W. W. Dawson is attached to a Cavalry Brigade, and Lieutenant E. C. Sampson to an Infantry Brigade for the same period.

"Sergeant-Major Kinsella obtained a 'special pass' (75 per cent.) in the May examination in Military Law (*d ii.*), and Administration, Organisation and Equipment (*d iii.*), gaining 170 marks out of a possible 200 in the first named, and 255 out of 300 in the latter."

QUEEN ALEXANDRA'S IMPERIAL MILITARY NURSING SERVICE.

Postings and Transfers.—Matrons: Miss M. Thomas, R.R.C., to Military Hospital, Portsmouth, from Military Hospital, Dover; Miss G. M. Richards to Gibraltar from Military Hospital, Portsmouth. Sisters: Miss A. Nixon to Military Hospital, Chatham, from Military Hospital, Hounslow; Miss S. K. Bills to Gibraltar from Military Hospital, Curragh; Miss M. Wright to Military Hospital, Harrismith, South Africa, from Military Hospital, Potchefstroom; Miss M. E. Harper, R.R.C., to Military Hospital,

Wynberg, Cape Colony, South Africa, from Military Hospital, Middelburg, Cape Colony. Staff-Nurses: Miss M. L. Kaberry to Egypt, from Cambridge Hospital, Aldershot; Miss E. K. Kaberry to Egypt, from Royal Herbert Hospital, Woolwich; Miss A. Ayre and Miss A. C. Mowat to Gibraltar, from Military Hospital, Curragh; Miss E. B. Darnell to Gibraltar, from the Queen Alexandra Military Hospital, Millbank, London; Miss M. C. E. Newman to Gibraltar, from Royal Victoria Hospital, Netley.

Appointments Confirmed.—Miss H. M. Barnett, Miss F. E. Morton, Miss L. A. Burgess, Miss A. B. Nunn, Miss C. C. M. Gibb, Miss M. E. Smith, Miss M. Irouside, Miss N. Stewart, Miss E. M. M. Malin, Miss A. Weir, Miss S. W. Wooler.

Promotions.—The following Staff Nurses to be Sisters: Miss K. Coxon, Miss E. St. Quintin.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain Edmond W. St. V. Ryan to be Surgeon-Major, dated August 7, 1907.

Surgeon-Captain Samuel J. J. Kirby to be Surgeon-Major, dated August 28, 1907.

IMPERIAL YEOMANRY.

The King's Own Royal Regiment, Norfolk.—Surgeon-Captain J. F. Gordon Dill, M.D., to be Surgeon-Major, dated July 14, 1907.

Scottish Horse.—Surgeon-Lieutenant J. A. Taylor, M.B., to be Surgeon-Captain, dated August 1, 1907.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Eastern Command, Woolwich Companies.—Leslie Vincent Ellis, to be Quartermaster with the honorary rank of Lieutenant, dated July 23, 1907.

London District, London Companies.—George Langrigg Leathes Lawson, to be Lieutenant, dated June 1, 1907.

Scottish Command, Edinburgh Company.—Lieutenant H. Wade, M.B., to be Captain, dated August 6, 1907.

Eastern Command, Woolwich Companies.—Lieutenant A. E. Jerman, to be Captain, dated August 6, 1907.

London District, London Companies.—Allan Chilcott Parsons, to be Lieutenant, dated September 1, 1907.

Argyll and Sutherland Bearer Company.—Captain J. A. Boyd, M.B., resigns his Commission, dated August 12, 1907.

4th or City of London Bearer Company.—Captain A. C. Tunstall, M.D., to be Major, dated July 25, 1907.

East Surrey Bearer Company.—Captain (Surgeon-Major, Army Medical Reserve of Officers, Honorary Captain in the Army) E. W. St. V. Ryan resigns his Commission, dated July 17, 1907.

The King has been graciously pleased to confer the Volunteer Officer's Decoration upon the undermentioned officer of the Volunteer Force, who has been duly recommended for the same under the terms of the Royal Warrant, dated July 25, 1892:—

Western Command, Liverpool Bearer Company.—Captain David Smart, M.B.

OTHER VOLUNTEER CORPS.

3rd Volunteer Battalion, The South Wales Borderers.—Surgeon-Lieutenant-Colonel J. R. Essex is granted the honorary rank of Surgeon-Colonel, dated June 26, 1907.

2nd Volunteer Battalion, The King's (Shropshire Light Infantry).—Charles Botterill Baxter, M.B., to be Surgeon-Lieutenant, dated July 1, 1907.

1st Volunteer Battalion, The King's Own (Yorkshire Light Infantry).—Surgeon-Captain S. L. Potter resigns his Commission, dated July 23, 1907.

3rd (The Blythwood) Volunteer Battalion, The Highland Light Infantry.—Surgeon-Major (Honorary Captain in the Army) R. Pollok, M.B., is borne as supernumerary whilst holding the appointment of Brigade-Surgeon Lieutenant-Colonel, Senior Medical Officer, Highland Light Infantry Volunteer Infantry Brigade, dated July 12, 1907.

1st Volunteer Battalion, The King's Own (Yorkshire Light Infantry).—Supernumerary Surgeon-Major E. Lee (Brigade-Surgeon Lieutenant-Colonel, Senior Medical Officer, Humber Volunteer Infantry Brigade) to be Surgeon-Lieutenant-Colonel, remaining seconded, dated July 18, 1903.

1st Volunteer Battalion, The Duke of Cambridge's Own (Middlesex Regiment).— Surgeon-Lieutenant H. W. Spaight resigns his Commission, dated August 1, 1907.

Royal Garrison Artillery Volunteers, 1st Forfarshire.— Surgeon-Captain G. Halley, M.B., to be Surgeon-Major, dated July 29, 1907.

Rifle, 1st Volunteer Battalion, The Duke of Cornwall's Light Infantry.— Prosper James Liston to be Surgeon-Lieutenant, dated August 12, 1907.

The King has been graciously pleased to confer the Volunteer Officer's Decoration upon the undermentioned officers of the Volunteer Force, who have been duly recommended for the same under the terms of the Royal Warrant, dated July 25, 1892 :—

Northern Command.—3rd Volunteer Battalion, The South Staffordshire Regiment : Surgeon-Major Charles Alexander MacMunn, M.D.

Western Command.—2nd Volunteer Battalion, The King's Shropshire Light Infantry : Surgeon-Major George Hollies, M.D.

EXAMINATIONS.

The following results of examinations are notified for general information :—

Passed in (h) i for the rank of Captain : Lieutenants R. J. B. Buchanan, G. S. Wallace, M.B., and A. W. Gater.

UNITED SERVICES MEDICAL SOCIETY.

The first meeting of the Society will be held at the Royal Army Medical College, Millbank, S.W., on October 10, 1907, at 8.30 p.m.

The President, Inspector-General Sir Herbert Ellis, K.C.B., Director-General of the Medical Department of the Navy, will read a short paper on the objects and uses of the Society, to be followed by a discussion.

It has also been arranged to exhibit objects of interest to members.

W. W. PRYN, C. H. MELVILLE, *Hon. Secretaries.*

ROYAL SCHOOL FOR OFFICERS' DAUGHTERS, BATH.

DECEMBER ELECTION, 1907.

Your interest and votes are earnestly requested on behalf of Victoria Grace Ferguson, aged 14, daughter of the late Surgeon-Major J. E. Ferguson, I.M.S., and grand-daughter of the late Colonel Hunter, C.B., C.S.I. Mrs. Ferguson has five children, between the ages of 10 and 17, to bring up on limited means.

The case is strongly recommended by General Sir Julius Raines, G.C.B., K.C.B., General Sir Oriel Tanner, K.C.B., Peter Graham, Esq., R.A., Surgeon-General Pinkerton, I.M.S. (Hon. Physician to the King), General Pottinger, R.A., General C. R. Blair, Colonel A. Dingwall-Fordyce (late Seaforth Highlanders), Colonel Cates, I.M.S.

REGISTER FOR INDIAN SERVANTS.

FEW officers on going to India have not experienced the difficulty of getting good servants. The discomforts on arrival and of a long journey up country, unprovided with a bearer, or, what is worse, provided with a hastily selected man, taken haphazard from the crowd of indifferent or bad characters who congregate in Bombay, have fallen to the lot of most of us, whilst the period of trial and vexation until a proper staff of servants is secured is familiar to us all.

In our Corps, with regular annual reliefs, it should not be difficult to arrange for an interchange. Officers leaving India would then be able to provide places for the good and tried retainers they are relinquishing, and new arrivals would, by taking on these men, be spared many of the worries and troubles which now befall them. Further, good servants would not be lost to the Corps, and the prospects of continuous employment could not fail to have attraction for the better class of men.

With these ends in view, officers due home from India are requested to communicate to the Journal particulars of servants whom they can recommend, so that officers going out in relief may have an opportunity of securing these men. The particulars required are :—

- (1) Class of servant.
- (2) Whether for bachelor or married officer.
- (3) District or station to which he belongs.
- (4) Any special recommendations.

NOTE.—The date the officer leaves India should also be stated, and when and where the servant will be available.

BIRTHS.

CROSSLEY.—An August 27, at West Hill, Calicut, India, the wife of Captain H. J. Crossley, R.A.M.C., of a daughter.

DAVY.—On September 22, at Colchester, the wife of Lieutenant P. C. T. Davy, R.A.M.C., of a daughter.

EDWARDS.—On August 28, at Westcroft, Privett Road, Gosport, the wife of Lieutenant G. B. Edwards, R.A.M.C., of a daughter.

PORTER.—On September 3, at Ravensdale, Belfast, to Lieutenant-Colonel and Mrs. Robert Porter, a son.

EXCHANGE.

The charge for inserting Notices respecting Exchanges in the Royal Army Medical Corps is 5/- for not more than five lines, which should be forwarded by Cheque or P.O.O., with the notice, to Messrs. G. STREET and CO., Ltd., 8, Serle Street, London, W.C., not later than the 22nd of the month.

NOTICE TO SUBSCRIBERS.

Letters regarding non-delivery of the Journal, or change of address, should be sent to the "Manager, Journal of the Royal Army Medical Corps," War Office, Whitehall, London, S.W., not later than the 25th of each month.

It is requested that all Cheques or Postal Orders for Subscription to the Journal, Corps News, Reprints, &c., be made payable to the "Manager, Journal R.A.M.C.," and not to any individual personally.

The Editor will be glad to receive original communications upon professional subjects, travel, and personal experiences, &c. He will also be glad to receive items of news and information regarding matters of interest to the Corps from the various garrisons, districts and commands at home and abroad.

All such Communications or Articles accepted and published in the "Journal of the Royal Army Medical Corps" will (unless the Author notifies at the time of submission that he reserves the copyright of the Article to himself) become the property of the Library and Journal Committee, who will exercise full copyright powers concerning such Articles.

Matter intended for the Corps News should reach the Editor not later than the 15th of each month for the following month's issue. All these communications should be written upon one side of the paper only, they should by preference be type-written, but, if not, all proper names should be written in capital letters (or printed) to avoid mistakes, and be addressed The Editor, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, War Office, Whitehall, London, S.W.

Communications have been received from Colonel R. H. Forman. Lieutenant-Colonels W. G. Macpherson, C.M.G., A. M. Davies, S. Westcott, C.M.G., N. Manders, F. J. Jencken. Majors C. G. Spencer, R. J. Blackham, J. G. McNaught. Captains A. C. Osburn, M. M. Lowsley, L. Bousfield, J. C. Kennedy, J. W. H. Houghton, A. O. B. Wroughton.

In the event of reprints of articles being required by the authors, notification of such must be sent when submitting the papers. Reprints may be obtained at the following rates, and other reprints at proportionate rates :—

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The following periodicals have been received :—*The British Medical Journal, The Lancet, Medical Press and Circular, The Hospital, Army and Navy Gazette, Public Health, The Royal Engineers' Journal, Journal of the Royal Sanitary Institute, Journal of the Royal Institute of Public Health, Guy's Hospital Gazette, Journal of Tropical Medicine and Hygiene, St. Bartholomew's Hospital Journal, Journal of the Royal United Service Institution, Transvaal Medical Journal, Journal of Tropical Veterinary Science, All-India Hospital Assistants' Journal, Indian Medical Gazette, Archives de Médecine Navale, Annali di Medicina Navale, Revista de Sanidad Militar, Archiv für Schiffs und Tropen-Hygiene, Le Caducée, Der Militärarzt, Bulletin de l'Institut Pasteur, Giornale Medico del Ro. Esercito, The Military Surgeon, U.S.A.*

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The Corps News is printed as an inset to the Journal and separate copies may be subscribed for, price 2d. monthly.

JOURNAL

OF THE

ROYAL ARMY MEDICAL CORPS.

Corps News.

NOVEMBER, 1907.

ARMY MEDICAL SERVICE.—GAZETTE NOTIFICATIONS.

Colonel James Magill, C.B., M.D., is placed on retired pay, dated September 6, 1907. He first entered the Service on March 30, 1872, and resigned his commission July 7, 1875. He re-entered the Service May 3, 1876; was promoted Surgeon-Major December 9, 1885; Surgeon-Lieutenant-Colonel May 3, 1896; and Colonel December 22, 1904. His war services are as follows: Soudan Expedition, 1884-5—Nile, with Guards' camel regiment; action of Abu Klea (severely wounded). Despatches, *London Gazette*, August 25, 1885. Medal with 2 clasps; bronze star. South African War, 1899-1902.—Principal Medical Officer of Division from April 16, 1900. Advance on Kimberley, including actions at Belmont, Enslin, Modder River and Magersfontein. Operations in the Orange Free State, February to May, 1900, including actions at Poplar Grove, Dreifontein, Vet River (May 5 and 6), and Zand River. Operations in the Transvaal in May and June, 1900, including actions near Johannesburg, Pretoria and Diamond Hill (June 11 to 12). Operations in the Transvaal, east of Pretoria, July to November 29, 1900, including action at Belfast (August 26 to 27). Operations in the Transvaal, west of Pretoria, November, 1900. Operations in Cape Colony, south of Orange River, 1900. Operations in Cape Colony, November, 1900, to May 31, 1902. Despatches, *London Gazette*, September 10, 1901. Queen's medal with 6 clasps. King's medal with 2 clasps. C.B.

Colonel William A. May, C.B., is placed on retired pay, dated September 18, 1907. He entered the Service September 30, 1874; was promoted Surgeon-Major September 30, 1886; Surgeon-Lieutenant-Colonel September 30, 1894; Brigade-Surgeon-Lieutenant-Colonel December 15, 1897; and Colonel March 22, 1903. His war services are as follows: South African War, 1900-1902.—Principal Medical Officer, Infantry Division, from January 19, 1900. Operations in the Orange Free State, April to May, 1900. Operations in the Orange River Colony, May to November 29, 1900, including actions at Biddulphsberg and Wittebergen. Operations in Cape Colony south of Orange River, March and April, 1900. Operations in the Transvaal, July, 1901. Operations in Orange River Colony, November 30, 1900, to May 31, 1902. Despatches, *London Gazette*, April 16, 1901. Queen's medal with 3 clasps. King's medal with 2 clasps. C.B.

The following Lieutenant-Colonels, from the Royal Army Medical Corps, to be Colonels: Douglas Wardrop, M.B., *vice* A. W. P. Inman, M.B., placed on half pay, dated August 14, 1907. George T. Goggin, *vice* J. Magill, C.B., M.D., dated September 6, 1907. John M. Jones, *vice* W. A. May, C.B., dated September 18, 1907.

ROYAL ARMY MEDICAL CORPS.

Lieutenant Winfrid K. Beaman, from the Seconded List, to be Lieutenant, dated September 1, 1907.

The Christian names of Lieutenant Herbert William Carson, M.B., are as now described, and not as stated in the *Gazette* of August 9, 1907.

Lieutenant Robert G. Archibald, M.B., is seconded for service under the Colonial Office, dated September 12, 1907.

Lieutenant James C. L. Hingston, from the Seconded List, to be Lieutenant, dated October 1, 1907.

ESTABLISHMENTS.

Royal Hospital, Kilmainham.—Lieutenant-Colonel Reginald J. Windle, M.B., Royal Army Medical Corps, to be Physician and Surgeon, *vice* Lieutenant-Colonel F. S. Heuston, C.M.G., Royal Army Medical Corps, dated October 1, 1907.

ARRIVALS HOME.—From Bermuda: Major S. F. St. D. Green. From West Africa: Captain R. McK. Skinner.

ARRIVALS HOME ON LEAVE.—From Malta: Colonel J. G. MacNeece and Lieutenant J. St. A. Maughan. From South Africa: Major D. J. Collins. From Egypt: Lieutenant G. W. Heron.

EMBARKATIONS.—For Egypt: Colonel J. M. Jones. For India: Lieutenant-Colonel G. H. Barefoot; Major N. Faichnie; Captain H. H. Norman; Lieutenants W. Egan, A. H. Bond and R. S. Smyth. For Gibraltar: Major A. E. C. Keble. For Mauritius: Majors J. H. Campbell, D.S.O., C. E. P. Fowler and C. A. Young. For South Africa: Major H. W. H. O'Reilly and Lieutenant A. S. Littlejohns. For West Africa: Captain C. J. O'Gorman, D.S.O.

TRANSFERS.—Captain H. P. W. Barrow from Irish to Western Command. Captain V. J. Crawford from Scottish to Southern Command. Captain J. G. Churton from Scottish to Aldershot Command.

TRANSFERS TO HOME ESTABLISHMENT.—Lieutenant-Colonel B. L. Mills from India. Lieutenant-Colonel W. L. Reade from India.

POSTINGS.—Lieutenant-Colonel B. L. Mills to Northern Command. Lieutenant-Colonels W. L. Reade and J. S. Green to Ireland. Captain H. B. Connell to Netley.

APPOINTMENTS.—Lieutenant-Colonel J. R. Dodd as Administrative Medical Officer at Belfast. Lieutenant-Colonel W. L. Reade to charge of Royal Infirmary, Dublin. Lieutenant-Colonel Sir J. Fayrer, Bart., has received an extension of one year in his appointment at the Duke of York's School. Captain J. G. Churton as Specialist in Operative Surgery, Aldershot. Captain H. P. W. Barrow appointed Adjutant, Manchester Companies, R.A.M.C. (Volunteers). Captain V. J. Crawford to charge of Military Families' Hospital, Portsmouth. Major S. F. St. D. Green to Military Families' Hospital, Aldershot.

SERVICE ABROAD.—Captain S. G. Butler for South Africa.

RETIRED PAY APPOINTMENT.—Lieutenant T. P. Thomas, R.A.M.C. (M.), appointed to the Medical Charge at Brecon.

QUARTERMASTERS.—Lieutenants and Quartermasters A. J. Pilgrim and A. Morrison embarked for Malta on September 25, 1907.

LIST OF CASUALTIES:—

Transfers to other Corps—673 Private B. Cameron, to 7th Hussars; 164 Private H. Robinson, to Royal Field Artillery; 19585 Private W. Partridge, to 16th Lancers; 17384 Private P. Ettridge, to 4th Hussars; 19068 Private A. J. Brown, to 4th Hussars.

Transfers from other Corps—1252 Private P. Wickers, from 1st Battalion Welch Regiment; 1253 Private H. Marks, from 4th Battalion Rifle Brigade; 1266 Private J. Whiterod, from 4th Battalion Rifle Brigade; 1283 Private — Simpson, from 1st Battalion King's Own Scottish Borderers.

Discharges.—5760 Sergeant Major P. Crowley, having reached the age; 7600 Quartermaster-Sergeant A. Banks, termination of second period; 6658 Quartermaster-Sergeant

P. Plunkett, termination of second period; 6001 Staff-Sergeant G. Ellison, after three months' notice; 5738 Sergeant T. H. V. Coad, after three months' notice; 10280 Private T. Hirst, termination of second period; 11840 Private E. Evans, medically unfit; 18071 Private W. E. Baxter, medically unfit; 18 Private T. Daly, medically unfit.

Transfers to Army Reserve.—89 Private G. E. Lee, 696 Private P. Kinlan, 697 Private M. Betty, 14404 Private W. Phythian, 704 Private J. Calderwood, 709 Private J. Wakeman, 710 Private J. Canning, 19239 Private A. E. Tanner, 19245 Private W. J. Dalgarno, 16502 Private G. Atherton, 713 Private R. Howells, 716 Private G. Milne, 715 Private J. Anderson, 724 Private D. Blayney, 18564 Private D. Campbell, 736 Private J. W. Nolan, 12532 Private J. G. Hayes, 708 Private A. Owen, 714 Private W. Parry, 711 Private J. F. Manning, 729 Private C. B. Jones, 12536 Private B. Bethell, 13064 Corporal J. Inglis, 19720 Private A. Swift, 723 Private W. G. Mills, 734 Private W. Fraser, 19552 Private M. E. Maton, 745 Private T. Corrigan, 732 Private E. Bountiff, 740 Private J. J. Quayle, 730 Private F. Bateman, 742 Private E. Lambert, 736 Private J. F. Knee, 12548 Private H. Phoenix, 752 Private J. S. Jeacle, 753 Private J. Devlin, 755 Private G. B. O'Donnell, 19266 Private J. Dobson, 19268 Private J. B. Kersey, 748 Private J. Clarke, 749 Private J. Evans, 757 Private S. Fawtroll, 760 Private J. Flynn, 761 Private J. Maher, 765 Private J. Power, 767 Private J. O'Donovan, 17548 Private H. Carter, 19273 Private G. Groessel, 19274 Private J. W. Mottey, 776 Private F. Powell, 762 Private A. Cummins, 777 Private M. Colesman, 774 Private W. B. Dunne, 758 Private J. W. Smith, 772 Private E. Kelly, 779 Private G. Howard, 775 Private M. Murphy, 17306 Private P. Whitty, 780 Private M. Sullivan, 781 Private W. Stephenson, 782 Private T. Hathaway, 19283 Private E. Meagher, 801 Private H. W. Napier, 19290 Private A. E. Horlock, 804 Private L. Cockrane, 787 Private C. Clement, 19296 Private E. T. J. Owen, 19285 Private F. L. Conboye, 793 Private G. H. Shindler, 12572 Private M. Colhoun, 799 Private G. Heperstall, 12584 Private P. M. Miller, 786 Private T. E. Hutchinson, 14611 Private P. E. Perryment, 802 Private R. Dixon, 19286 Private H. H. N. Barnes, 805 Private W. Gainley, 817 Private J. Noon, 19302 Private F. Barnshawe, 815 Private J. E. Chapman, 808 Private P. J. Finogan, 12595 Private H. Johnston, 19304 Private E. Painter, 19313 Private E. Newman, 14619 Private C. T. Chandler, 821 Private W. Marks, 813 Private R. Taplin, 810 Private G. Watson, 816 Private W. Taylor, 814 Private D. Connal.

Embarkations for Abroad.—To Bermuda, per s.s. "Port Kingston," September 6, 1907: 10034 Sergeant F. A. Mulley.

To South Africa, per s.s. "Braemar Castle," September 18, 1907: 14617 Corporal T. Aston, 11275 Corporal A. Breewood, 18463 Corporal F. W. Day, 16265 Corporal W. Harper, 14017 Private T. Adamson, 19579 Private T. Ball, 411 Private C. G. Bowden, 904 Private J. J. Dunn, 258 Private D. Dakers, 994 Private G. A. Davis, 299 Private G. Fishlock, 19682 Private L. G. Gill, 19411 Private W. H. Grigg, 304 Private W. P. Haskins, 1039 Private A. F. Hall, 19962 Private J. D. Hill, 19546 Private A. S. Joys, 19958 Private T. Lythgoe, 1041 Private H. G. Price, 150 Private J. Robinson, 19922 Private H. V. Rains, 422 Private R. O. Sevier, 792 Private F. Shearman, 17362 Private H. B. Shaw, 365 Private W. A. Warner, 719 Private A. Winkworth, 351 Private J. Walker, 18410 Private F. Wyeth, 19478 Private A. Pollitt.

To Mauritius, per s.s. "Braemar Castle," September 18, 1907: 7680 Sergeant-Major W. Carey, 10059 Staff-Sergeant G. W. Carnell, 12002 Corporal W. J. Knee, 18324 Corporal D. Parker, 15483 Corporal E. Sharp, 12965 Corporal H. E. Tyler, 763 Private T. Desmond, 85 Private A. F. J. Evans, 11848 Private A. East, 19855 Private E. Kerr, 293 Private G. Hanchette, 19674 Private W. J. Peters, 18003 Private F. Batcock.

To Egypt, per s.s. "Sicilia," September 25, 1907: 9289 Staff-Sergeant H. Lyons, 11916 Sergeant E. J. Gosling, 19336 Private A. Barnes, 265 Private A. E. Clarke, 1060 Private A. J. Burrell, 990 Private S. E. Tasker, 13351 Private J. J. Taylor, 19010 Private B. J. Bull, 600 Private A. F. Dav, 964 Private A. A. Richardson, 15995 Private J. Whittaker, 1074 Private G. C. Smithdale.

To Malta, per s.s. "Sicilia," September 25, 1907: 11777 Corporal G. W. Overton, 18926 Corporal W. Worrall, 867 Private J. M. Grogan, 184 Private J. B. Dodd, 11006 Private A. Bronsell, 19979 Private G. E. Thaine, 706 Private R. Allan, 19621 Private W. E. Kite, 9952 Private W. R. Baker, 221 Private G. J. Long, 71 Private H. Lane, 132 Private S. Dart.

To Gibraltar, per s.s. "Sicilia," September 25, 1907: 12588 Corporal J. Meason, 743 Private F. C. Coles, 224 Private W. Nott, 296 Private F. G. Wilson, 19798 Private W. H. Boister, 19502 Private F. G. Boulter, 880 Private F. D. Grace, 218 Private L. A.

Dale, 19578 Private G. F. Webster, 19881 Private A. R. Woodroffe, 45 Private T. J. Moffatt, 133 Private H. Waggitt, 19387 Private C. W. Oldridge.

To Malta, September 28, 1907: 8474 Staff-Sergeant F. Oliver, 10124 Corporal G. Bateman.

To Gibraltar, September 28, 1907: 10922 Sergeant H. Robinson, 10036 Corporal F. Stanley.

Disembarkations from Abroad.—From South Africa, per s.s. "Guelph," September 2, 1907: 19977 Private M. Sullivan.

From Malta, September 2, 1907: 15983 Corporal C. E. Lister.

From Malta, per s.s. "Nile," September 17, 1907: 9668 Staff-Sergeant G. Hurrell.

From Sierra Leone, per s.s. "Loanda," September 15, 1907: 12592 Lance-Corporal J. G. Fraser.

From Bermuda, per s.s. "City of Bombay," September 25, 1907: 8826 Staff-Sergeant B. Townend, 18158 Corporal C. P. Pursey, 18152 Private J. Oswald.

From Gibraltar, per s.s. "Ortona," October 5, 1907: 8885 Corporal H. Gibbons.

From Gibraltar, per Hospital Ship "Maine," September 30, 1907: 16556 Private J. Nelville, 18269 Private W. Frazer.

THE FOLLOWING NON-COMMISSIONED OFFICER AND MAN HAVE QUALIFIED FOR PROMOTION FOR QUARTERMASTER-SERGEANT AND CORPORAL RESPECTIVELY.

9215 Staff-Sergeant A. Holden, 12619 Private M. Keohane.

NOTES FROM BELFAST.—Captain G. J. Stoney Archer, R.A.M.C., writes (October 16, 1907): "On promotion to Colonel, our late Administrative Medical Officer, Colonel Goggin, has been transferred from this district to Chester. Before leaving the station he was entertained to dinner by the officers of the district, and several congratulatory speeches were made. Colonel Goggin was extremely popular, and he takes with him the heartiest good wishes of all officers and men of this district.

"On the 20th ult. the Field Ambulance at the Curragh broke up and the various detachments returned to their own districts. C Section was mainly composed of non-commissioned officers and men from this district. On the whole the men enjoyed the outing, and there is no doubt that the practical experience which they had in the organisation of our new unit, also looking for wounded, pitching camp, company drill, &c., was most useful, and was of a nature that could not possibly have been obtained otherwise. During the middle of the training we were taken away for ten days, to take part in the Irish Command manoeuvres, and everyone was anxious to show what the new ambulance could do, with regard to treating men in the field; however, no opportunity for this was given, very much to the disappointment of officers and men. On the march our men kept up splendidly, considering how little practice they get. At the end of a twenty-mile march, when all were going strong, a wag was overheard to say: 'We are doing well, considering the only exercise we get is running up and down stairs.' A very wholesome rivalry existed between the sections, each vying with the other, both in work and in play. The Belfast Company was popularly known as the 'Stone-throwers,' and often, as the camp was being pitched or struck, one could hear the non-commissioned officers and men encouraging one another by such expressions as, 'Hurry up now, or the "Stone-throwers" will be ready first.' It was the general opinion of non-commissioned officers and men that some change is required in the method of carrying the great coat and canteen, which on account of having no support above, work back, and become very uncomfortable after marching a few miles. To overcome this the men were continually passing pieces of string from the top of the canteen to the haversacks and water-bottle straps; this was an improvement with regard to comfort, but of course did not look well. During the absence of the Royal Army Medical Corps on field training, No. 3 Belfast Militia, Royal Army Medical Corps, took over the duties in the hospital. They are a smart lot of men and they carried out their duties in a very efficient manner.

"*Annual Outing, 15th Company, Royal Army Medical Corps.*—On Saturday, September 28, the Royal Army Medical Corps at Headquarters had their annual outing. The party proceeded in brakes, accompanied by a cyclist detachment, to Donaghadee, via Holywood and Bangor. An excellent lunch was provided at the Imperial Hotel, Donaghadee, after which the members visited the places of local interest and then drove home via Newtownards, where a stop was made for tea and an impromptu 'sing-song.' They then returned to Belfast, reaching home about 10 p.m. The weather was all that could be desired and everyone enjoyed the drive, which was nearly 40 miles.

"We regret to chronicle the death of Mrs. Morgan, wife of No. 10464 Private A. Morgan, Q.A.I.M.N.S., who died after a short illness, leaving her husband with two small children, the baby being only ten days old. The officers and men showed their sympathy in a practical manner.

"I have been asked by the Belfast Company to suggest that a selection of the various Corps Examination papers for non-commissioned officers and men for promotion might be published in the Journal in the same way as is at present done for officers' examinations. If this were done I am sure that it would increase the interest which is already taken in our Journal by the non-commissioned officers and men of the Corps." [This suggestion is being considered.—ED.]

NOTES FROM CORK.—(October 12, 1907). "No. 16 Company Sports Club was reorganised at the beginning of last summer, and the detachment were able to produce a cricket team again for the first time since the South African War. The Administrative Medical Officer, Cork District (Colonel Webb, A.M.S.), kindly consented to fulfil the post of President of the club, the officers of the Corps stationed at Cork were made Vice-Presidents, and Corporal Griffin, R.A.M.C., was elected Secretary, with a Representative Committee from the non-commissioned officers and men of the company. In spite of the very wet summer the cricket team, of which Corporal Gresham was elected Captain, managed to put in a fairly successful season; they played altogether ten matches, of which they won three, lost five, and drew two.

"The rain was too much for many cycle runs, which it was hoped would be a feature of the Club. Week after week runs had to be cancelled on account of the weather, only one taking place the whole summer, to Inniscarra, just before the company left for manœuvres."

NOTES FROM THE SCOTTISH COMMAND.—Captain V. J. Crawford, R.A.M.C., writes (October 15, 1907): "Lieutenant-Colonel Moffat, who has been on sick leave since the beginning of July, has now returned to duty, having quite recovered his health. Captain McLennan, who has been at Perth during Lieutenant-Colonel Moffat's absence, now goes to Berwick-on-Tweed in relief of Lieutenant Sim, who goes on leave. Captain Mackessack is fishing in the North of Scotland, but he has sent us no specimens up to the present. Lieutenant-Colonel Birrell has just returned from a trip round the Hebrides, where he has been inspecting the recruiting stations. The 39th Brigade, Royal Field Artillery, having arrived at Piershill from Shorncliffe, Captain Lloyd has taken medical charge and gone to live with them. Captain Churton has been appointed Specialist in Operative Surgery at Aldershot, and will take up his duties at the end of November.

"The weather is sometimes fairly pleasant, and we flatter ourselves we are progressing in our studies in the science of 'gowf.'"

NOTES FROM CEYLON.—Lieutenant C. R. Millar, R.A.M.C., writes (September 24, 1907): "Intimation has been received from the War Office that Lieutenant-Colonel G. H. Sylvester, R.A.M.C., is retiring on the expiration of his leave, viz., October 20, 1907. Lieutenant-Colonel C. A. Lane, R.A.M.C., is appointed Senior Medical Officer, vice Lieutenant-Colonel Sylvester.

"*Cricket.*—The Cricket XI. has been making good progress lately, having won all matches during the last two months, with the exception of a match against the Second XI. Colombo Cricket Club, which resulted in a draw. Corporal Evans and Privates Pitt and Aldridge have done some good batting; Corporal Evans and Private Pitt have also retained their reputation as bowlers. Pitt is very often selected to play for the garrison team, and usually makes very good scores.

"*Football.*—The Football XI. has also done very well during the last couple of months. A match was played against the Colombo Hockey and Football Club on the 17th inst., which caused a good deal of excitement, being the first occasion on which the two teams met, and which resulted in a win for our opponents by 2 goals to *nil*.

"*Tennis.*—The Company Sports Club held a tennis tournament on the 14th inst., several good sets being played. Corporal Mackenzie and Private Pitt were the winners. We have a new tennis court in course of construction, which is being made by the men in their spare time, and we hope to have it in full working order very shortly."

NOTES FROM QUETTA, BALOOCHISTAN.—Captain N. Dunbar Walker, R.A.M.C., writes (September 20, 1907): "News from this station appeared last in the April number, and as regards staff we have one addition and one transfer. Major T. H. J. C. Goodwin, D.S.O., R.A.M.C., joined us in March, and Lieutenant-Colonel

W. C. Beevor, C.M.G., R.A.M.C., was transferred to Sialkot in May. The former has taken over the Staff-Surgeoncy from Captain N. Dunbar Walker, R.A.M.C., and has also been appointed Specialist in Surgery to the 4th (Quetta) Division. Two of our staff, Captains C. Bramhall and J. D. Richmond, R.A.M.C., are still on sick leave, which has left us short-handed all the summer, as Captain N. Dunbar Walker was eight weeks out at a summer camp of British infantry some twelve miles away, and Captain M. F. Grant was at a similar camp for gunners for six weeks, fourteen miles away.

"We have had a cool summer, but the gardens in cantonments, including that of the 'Chummary,' look very dried up, as since the Staff College has been occupied, very little irrigation water has got down to cantonments. There is a big scheme on foot to 'bund' up a long valley some seven miles away, there to collect the winter's snow and rain.

"The Horse Show is just over, in which our Senior Medical Officer, Lieutenant-Colonel T. J. O'Donnell, D.S.O., R.A.M.C., judged in many classes. Two cups came to the Corps, the Principal Medical Officer, Colonel P. M. Ellis, taking second prize in the infantry chargers, and the Senior Medical Officer taking a cup for the best country-bred in the show. The officers, Royal Army Medical Corps, presented one of the cups at this show.

"We were 'At Home' one day in the May races, and have again had a tent on the last day of the autumn meeting, which has just finished. Our Senior Medical Officer had two ponies running, both of which have got 'home' once during the meeting, the owner being 'up' on one occasion.

"Shooting prospects are very bad indeed; very poor 'bags' are reported by parties out on the first.

"Brigade and Divisional manœuvres start in a day or two, and last a month. Captain C. H. Carr, R.A.M.C., and Captain H. W. Hooper, D.S.O., R.A.M.C., are going out, and a Royal Army Medical Corps officer is coming from Karachi to do duty here during their absence."

NOTES FROM SIMLA, INDIA.—Lieutenant-Colonel H. B. Mathias, D.S.O., Officiating Secretary to the Principal Medical Officer, His Majesty's Forces in India, writes (September 19, 1907):—

"*Appointments.*—Major A. P. Blenkinsop has been selected, with effect from July 24 last, for the appointment of Inspector of the Health Efficiency of British Troops, and also for special work in connection with the treatment of venereal disease. The following officers are appointed specialists in the subjects named: *Electrical Science*—Major M. Boyle, Major J. Grech, Captain A. H. Waring, Captain T. S. Coates. *Otology, Laryngology and Rhinology*—Major G. St. C. Thom. *Midwifery and Diseases of Women and Children*—Captain H. G. Martin, Captain S. O. Hall.

"The following officers embarked from home on September 4, 1907, and are posted as follows: Lieutenant-Colonel T. Daly, 3rd (Lahore) Division, Ferozepore, to command Station Hospital; Captain L. Humphry, 5th (Mhow) Division; Lieutenant C. G. Browne, 2nd (Rawalpindi) Division.

"The following officers have been appointed to the Command of the Station Hospitals mentioned against their names:—

"TO COMMAND STATION HOSPITALS.

"Northern Army.

Rank and name	Name of Station Hospital to which appointed	Date from which appointment takes effect
Lieut.-Col. M. W. O'Keefe	Peshawar	March 1, 1908*
.. ..	Nowshera†	
.. D. O'Sullivan	Rawal Pindi	November 4, 1905
.. B. M. Skinner, M.V.O.	Sialkot	February 20, 1908*
.. H. D. Rowan	Lahore Cantonment	October 14, 1905
.. T. Daly†	Ferozepore	October 10, 1907*
.. J. Carmichael	Jullundur	January 18, 1906
.. F. H. Treherne	Ambala	October 22, 1907*
.. F. J. Jencken	Meerut	April 4, 1907
.. T. B. Winter	Bareilly	October 31, 1906

* Approximate date of joining. † An officer will be appointed later. ‡ From England.

§ To undergo one month's instruction in sanitation at Rawalpindi.

"Northern Army—continued.

Rank and name	Name of Station Hospital to which appointed	Date from which appointment takes effect
Lieut.-Col. R. E. R. Morse	Lucknow	January 20, 1908*
„ H. A. Haines	Fyzabad	February 20, 1908*
„ E. H. Lynden-Bell	Allahabad	February 20, 1908*
„ W. B. Thomson	Calcutta	January 1, 1908*
„ J. D. T. Reckitt	Murree	March 1, 1908
„ W. C. Beevor, C.M.G.	Dalhousie	„ „
„ R. Holyoake	Dagshai	March 1, 1907
Captain A. J. Hull	Jutogh	March 1, 1908
Lieut.-Col. T. P. Woodhouse	Kasauli	March 1, 1907
„ F. W. G. Hall	Landour	„ „
„ H. M. Adamson	Ranikhet	„ „
„ W. T. Swan	Chakrata	March 1, 1908
„ J. Donaldson	Naini Tal	March 1, 1907
„ W. W. Pike, D.S.O.	Darjeeling	March 1, 1908
	Lebong†	„ „

"Southern Army.

Lieut.-Col. T. J. O'Donnell, D.S.O. ..	Quetta	October 31, 1905
„ R. L. R. McLeod	Karachi	February 22, 1908 *
„ S. Westcott, C.M.G.	Mhow	March 7, 1907.
„ H. Carr	Nasirabad	October 9, 1906
„ A. E. Morris	Jubbulpore	September 29, 1906
„ J. M. F. Shine	Jhansi	March 30, 1906
„ H. S. McGill	Poona	April 1, 1907
„ C. T. Blackwell	Belgaum	February 24, 1907
„ G. F. Gubbin	Colaba	March 25, 1906
„ S. C. B. Robinson	Ahmednagar	October 26, 1906
„ T. J. R. Lucas	Bangalore	December 4, 1906
„ G. Cree	Madras	March 5, 1908*
„ J. Battersby	Secunderabad	March 27, 1907
„ H. J. R. Moberley†	Maymyo	March 15, 1908*
„ P. C. H. Gordon	Rangoon	March 4, 1907
	Mount Abu†	March 1, 1908
„ A. Kennedy	Pachmarhi	March 1, 1907
„ C. W. Thiele	Wellington	March 1, 1908

* Approximate date of joining. † An officer will be appointed later. ‡ From England.

"Aden Reliefs."—Captain J. M. H. Conway, 2nd (Rawal Pindi) Division, to relieve Captain A. J. Williamson, and sail by 1st Transport "Assaye," October 4, 1907, from Karachi; Lieutenant-Colonel J. Fallon, 3rd (Lahore) Division, to relieve Major F. G. Faichnie, and sail by 7th Transport "Plassy" (Hospital Ship), January 3, 1908, from Bombay (to command Station Hospital, Aden); Captain B. H. V. Dunbar, 5th (Mhow) Division, to relieve Captain M. Foulds, and sail by 7th Transport "Plassy" (Hospital Ship), January 3, 1908, from Bombay; Major F. R. Buswell, 6th (Poona) Division, to relieve Captain J. F. Whelan, and sail by 11th Transport "Plassy" (Hospital Ship), March 6, 1908, from Bombay; Captain C. H. Carr, 4th (Quetta) Division, to relieve Captain T. F. Ritchie, and sail by 11th Transport "Plassy" (Hospital Ship), March 6, 1908, from Bombay.

"To be Transferred from Burmah (1907-08):—

Rank and name of officer	Division to which posted	Remarks
Lieut.-Col. W. W. Pike, D.S.O.	8th Div.	Darjeeling, to command Station Hospital
Major H. W. K. Read	„	„ „ „ „
Capt. H. V. Bagshawe	7th Div.	Ranikhet, for duty during summer of 1908
„ W. W. Browne	„	Landour, „ „ „ „
„ N. E. J. Harding	8th Div.	Lebong, „ „ „ „

¹ Owing to the evacuation of D'thala in the Hinterland, the establishment of Royal Army Medical officers at Aden will, until further notice, consist of two field officers and three Captains.

"For Duty in Burmah" (1907-08):—

Rank and name of officer	From whence detailed	Remarks
Lieut.-Col. H. J. R. Moberly..	England ..	Maymyo, to command Station Hospital.
Major J. W. Jennings, D.S.O.	8th Division	
" C. W. Duggan ..	" ..	
Capt. H. C. Hildreth ..	.. 9th Division	
" J. E. Powell ..	.. 7th "	
" H. H. Norman ..	.. England	
Lieut. D. P. Johnstone ..	.. 9th Division	
" J. P. Lynch ..	.. 7th "	
" W. S. Nealor ..	.. 8th "	
" A. H. Bond ..	.. England	

"For Duty in Connection with Embarkation and Disembarkation of Troops and Invalids, During the Season 1907-08: Karachi, Major R. C. Thacker; Bombay, Major H. E. Winter.

"Leave.—The following officers have been granted extension of medical certificate leave out of India: Major L. A. Mitchell, from September 9, 1907, to December 8, 1907; Captain D. P. Johnstone, from August 26, 1907, to November 25, 1907; Captain W. H. Odium, from September 14, 1907, to December 13, 1907; Captain M. C. Wetherell, from September 1, 1907, to date of embarkation for India; Captain J. D. Richmond, from September 5, 1907, to date of embarkation for India; Captain R. B. Hole, from August 26, 1907, to date of embarkation for India.

"Standing Committee on Enteric Fever.—The next meeting of the Standing Committee on Enteric Fever will be held at Simla on Wednesday, October 16, 1907. Lieutenant-Colonel D. O'Sullivan, R.A.M.C., has been appointed a member, *vice* Captain L. W. Harrison, *tour-expired.*"

QUEEN ALEXANDRA'S IMPERIAL MILITARY NURSING SERVICE.

Postings and Transfers.—Sisters: Miss E. M. E. Todd, to Military Hospital, Colchester, from Connaught Hospital, Aldershot; Miss E. H. Hay, to Connaught Hospital, Aldershot, from Military Hospital, Colchester; Miss M. M. Tunley, to Royal Victoria Hospital, Netley, from Cambridge Hospital, Aldershot; Miss M. Smith, to Cambridge Hospital, Aldershot, from Royal Victoria Hospital, Netley; Miss G. M. Allen, to Military Hospital, Chatham, from Military Hospital, Colchester; Miss P. Steele, to Military Hospital, Colchester, from Military Hospital, Chatham; Miss A. Nixon, to s.s. "Plassy," for Indian Troopship Service, from Military Hospital, Chatham; Miss L. M. Toller, to s.s. "Plassy," for Indian Troopship Service, from the Queen Alexandra Military Hospital, Millbank, London. Staff-Nurses: Miss C. M. Hodson, to the Queen Alexandra Military Hospital, Millbank, London, on appointment; Miss M. A. McCabe, to the Queen Alexandra Military Hospital, Millbank, London, on appointment; Miss B. M. Oates, to the Queen Alexandra Military Hospital, Millbank, London, on appointment.

Appointments Confirmed.—Staff-Nurses: Miss E. R. Collins, Miss K. F. G. Skinner.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Major Edmond W. St. V. Ryan, having resigned his Commission in the Volunteers, ceases to belong to the Army Medical Reserve of Officers.

ARMY MEDICAL RESERVE.

Walter George Hughes Cable to be Lieutenant on probation, dated September 2, 1907.

ROYAL MALTA ARTILLERY.

Surgeon-Lieutenant Robert Randon, M.D., to be Surgeon-Captain, dated October 5, 1907.

IMPERIAL YEOMANRY.

The King's Colonials.—William Savile Henderson, M.B. (late Surgeon-Captain), 8th (Scottish) Volunteer Battalion, the King's (Liverpool Regiment), to be Surgeon-Lieutenant (extra), under the conditions of Paragraph 28, Imperial Yeomanry Regulations, dated September 1, 1907.

¹ The establishment for the Burmah Division has been fixed at 7 Field Officers, 11 Captains and Lieutenants.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Eastern Command: Woolwich Companies.—The Reverend George Frederic Cecil de Carteret, M.A. (formerly Acting Chaplain), 1st Gloucestershire Royal Engineers (Volunteers), is appointed Acting Chaplain, dated July 23, 1907.

Staffordshire Bearer Company.—Captain J. A. Wolverson resigns his Commission, dated August 10, 1907.

OTHER VOLUNTEER CORPS.

1st North Riding of Yorkshire, Royal Garrison Artillery (Volunteers).—Surgeon-Captain S. Farmer resigns his Commission, dated August 31, 1907.

2nd Volunteer Battalion, The King's (Shropshire Light Infantry).—Surgeon-Major G. Hollies, M.D., to be Surgeon-Lieutenant-Colonel, dated August 1, 1907.

1st Suffolk and Harwich Royal Garrison Artillery (Volunteers).—Surgeon-Captain A. Y. Pringle resigns his Commission, dated September 1, 1907.

1st Volunteer Battalion, The Royal Sussex Regiment.—Surgeon-Lieutenant E. R. Hunt to be Surgeon-Captain, dated August 3, 1907.

6th (Fifeshire) Volunteer Battalion, The Black Watch (Royal Highlanders).—Surgeon-Major D. H. Kyle, M.B., resigns his Commission, dated August 5, 1907.

1st Dorsetshire Royal Garrison Artillery (Volunteers).—Surgeon-Lieutenant T. A. Walker to be Surgeon-Captain, dated September 9, 1907.

EXAMINATIONS.

The following results of examinations are notified for general information :—

Passed in (b) i for the rank of Captain: Lieutenants P. C. T. Davy, M.B., and G. Ormrod, M.B.

ROYAL SCHOOL FOR OFFICERS' DAUGHTERS, BATH.

DECEMBER ELECTION, 1907.

Your interest and votes are earnestly requested on behalf of Victoria Grace Ferguson, aged 14, daughter of the late Surgeon-Major J. E. Ferguson, I.M.S., and grand-daughter of the late Colonel Hunter, C.B., C.S.I. Mrs. Ferguson has five children, between the ages of 10 and 17, to bring up on limited means.

The case is strongly recommended by General Sir Julius Raines, G.C.B., K.C.B.; General Sir Oriel Tanner, K.C.B.; Peter Graham, Esq., R.A.; Surgeon-General Pinkerton, I.M.S. (Hon. Physician to the King); General Pottinger, R.A.; General C. R. Blair; Colonel A. Dingwall-Fordyce (late Seaforth Highlanders); Colonel Cates, I.M.S.

REGISTER FOR INDIAN SERVANTS.

Few officers on going to India have not experienced the difficulty of getting good servants. The discomforts on arrival and of a long journey up country, unprovided with a bearer, or, what is worse, provided with a hastily selected man, taken haphazard from the crowd of indifferent or bad characters who congregate in Bombay, have fallen to the lot of most of us, whilst the period of trial and vexation until a proper staff of servants is secured is familiar to us all.

In our Corps, with regular annual reliefs, it should not be difficult to arrange for an interchange. Officers leaving India would then be able to provide places for the good and tried retainers they are relinquishing, and new arrivals would, by taking on these men, be spared many of the worries and troubles which now befall them. Further, good servants would not be lost to the Corps, and the prospects of continuous employment could not fail to have attraction for the better class of men.

With these ends in view, officers due home from India are requested to communicate to the Journal particulars of servants whom they can recommend, so that officers

going out in relief may have an opportunity of securing these men. The particulars required are :—

- (1) Class of servant.
- (2) Whether for bachelor or married officer.
- (3) District or station to which he belongs.
- (4) Any special recommendations.

NOTE.—The date the officer leaves India should also be stated, and when and where the servant will be available.

ROYAL ARMY MEDICAL COLLEGE.

EXAMINATION OF CAPTAINS FOR PROMOTION TO MAJOR, SEPTEMBER, 1907.

Hygiene (for Class). (Practical).—Saturday, September 28, 1907. From 10 a.m. to 1 p.m.

(1) Examine the sample of water before you, as follows: (a) Qualitatively, (b) quantitatively: (1) For the oxygen absorbed in fifteen minutes by Tidy's process; (2) chlorine. Express the results in parts per 100,000 and in grains per gallon.

(2) Examine the sample of milk before you, as follows: (a) For the presence of chemical preservatives, (b) quantitative—fat (Werner Schmidt process), (c) the specific gravity of the sample is, and a Richmond slide scale is provided. Give an opinion on the quality of the milk under examination.

Hygiene (for Class). (Written).—Monday, September 30, 1907. From 2.30 p.m. to 5.30 p.m.

[Only four questions to be answered, of which No. 5 must be one.]

(1) Draw up a scale of rations that you would recommend for a body of troops on active service in a temperate climate, specifying as near as you can the amounts of proximate principles contained in the food articles you select.

(2) What would be your procedure in regard to the supervision of the water supply to the troops under your medical charge, in barracks at a home station?

(3) Describe in detail the preventive measures you would adopt, when in charge of European troops, in the case of (a) anticipated plague, and (b) the actual occurrence of the disease.

(4) In hot climates there is, on the whole, a greater necessity for the careful supervision of food supplies than in cold or temperate climates. Mention the articles of food to which you would specially direct your attention, and the chief recommendations you would make in regard to them, if in medical charge of troops at a tropical station.

(5) An outbreak of enteric fever has occurred, and suspicion points to an important well as the source of infection. Describe in detail how the presence of the *Bacillus typhosus* may be determined.

Pathology (for Class). (Practical).—Friday, September 27, 1907. From 10 a.m. to 1 p.m.

(1) Examine the culture marked with your number, and write an account of the results of your examination. Leave two stained films, one of them a Gram specimen, beside your microscope, properly labelled.

(2) Stain the unfixed film, marked with your number, so as to demonstrate the presence of any protozoal organisms that may be present in it. Write an account of what you find, and leave your film, labelled as directed, in focus under your oil-immersion lens.

(3) Stain a film of the pathological secretion provided, in order to determine the presence or absence of tubercle bacilli. Leave your film for examination, and record in your paper what you have found.

(4) Oral examination.

Pathology (for Class). (Written).—Monday, September 30, 1907. From 10 a.m. to 1 p.m.

(1) Discuss the value of the agglutination test for typhoid and Malta fevers. What are the principal fallacies in connection with the test which may lead to an erroneous interpretation of the results, and how would you eliminate such fallacies?

(2) Describe the chief morphological and cultural characteristics of the cholera vibrio. What is meant by "Pfeiffer's phenomenon," and how would you apply this in attempting to identify Koch's vibrio?

(3) Describe the adult male parasites of the following species: (a) *Ankylostoma duodenale*, (b) *Bilharzia hematobia*, (c) *Filaria nocturna*. In what situations are these forms encountered in their human hosts?

(4) What evidence do we possess as to the causative rôle of the *Spirochæta pallida* in syphilis?

MARY KINGSLEY MEDAL.

SERIES OF AWARDS BY THE LIVERPOOL SCHOOL FOR TROPICAL RESEARCH.

When Miss Mary Kingsley, the famous African traveller, died in 1900, the Liverpool School of Tropical Medicine decided to commemorate her work in the tropics by the issue of a "Mary Kingsley Medal" to be presented to those who have distinguished themselves in the work of special research into tropical medicine. The original of the medal was designed by Mr. J. H. McNair and Professor Allen of the University of Liverpool. It is in bronze, and contains a bas-relief portrait of Miss Kingsley on the obverse, and a suitable design on the reverse side, with the inscription "Devotion to Science." The first four recipients were presented with the medals by Princess Christian, honorary president of the school. The later presentations have since been made by the courtesy of the Secretary of State for Foreign Affairs, through the British Ambassadors, to the various countries concerned.

The following is the list of those who have received the medal, with a note of their work:—

(1) Colonel David Bruce, C.B., F.R.S., D.Sc., Royal Army Medical Corps. He discovered the cause of Malta fever, an important disease of warm climates, in 1887. In 1894 showed causation of Nagana, an important disease of cattle in Africa, and discovered parasite, belonging to the group called Trypanosoma, which is carried from one animal to another by the agency of Glossina, or tsetse flies; in 1903 he was the head of the Commission which clearly demonstrated that another kind of trypanosome is the cause of sleeping sickness in man, and is carried by another kind of Glossina. Since then he has ably directed an extensive inquiry into Malta fever, which has proved that that malady is produced by the milk of infected goats.

(2) Geheimrath Professor Dr. Robert Koch, Nobel Laureate. He ascertained the cause of cholera in 1883, shortly after his epoch-making discovery of the cause of tuberculosis. Later he paid many visits to the tropics to study tropical diseases, and he has added much to knowledge regarding them, especially his discovery of the frequency of malarial infection in children.

(3) Dr. A. Laveran, Pasteur Institute, Paris, and D.Sc., University of Liverpool. In 1880 he made the great discovery that malarial fever is caused by parasites in the blood, and he has added much to the knowledge of this disease, and also of other tropical diseases, especially those caused by trypanosomes in man and animals.

(4) Sir Patrick Manson, F.R.S., K.C.M.G., London School of Tropical Medicine. In 1878 he discovered that one of the parasites of man belonging to the group of Filaria is carried by a kind of mosquito, and since then he has contributed much to the knowledge of these parasites and the diseases caused by them, and also to tropical medicine in general.

(5) Dr. Basile Danilowsky, Professor of Physiology, University of Kharkoff. He discovered numerous parasites of the blood in a large number of animals shortly after Laveran's discovery was made, thus throwing much light on diseases of man due to similar organisms. His observations have been the basis of much of the work done since then on the subject.

(6) Dr. Charles Finlay, Chief Sanitary Officer of Cuba. In 1880 he originated the theory that yellow fever is carried by mosquitoes. By careful observations he ascertained the species of mosquito concerned, and thus enabled the American Commission under Major Reed to verify the theory finally in 1901. The methods of preventing the disease, used since then with such brilliant success in Havana and Panama, were largely based upon his original suggestion.

(7) Dr. Camille Golgi, Professor of Pathology, University of Pavia. In 1887 he made a complete study of the life-cycle of the parasites of malaria; showed that they belong to different varieties, and demonstrated that the attack of fever is caused by their sporulation—thus elucidating the whole subject of the infection within the human body.

(8) Colonel W. G. Gorgas, United States Army. As Chief Sanitary Officer of Havana he gave practical effect in 1902 to the discoveries of Finlay and of the American Commission in connection with yellow fever, and by his energy and capacity succeeded in banishing the disease from the city. Since then, as Chief Sanitary Officer of the Canal Zone of the Isthmus of Panama, he has kept that area practically free both from yellow fever and from malaria, thus enabling the construction of the canal to be carried on in security. The practical sanitary labours of Colonel Gorgas have given the work the most brilliant possible example of what such work can effect in the tropics.

(9) Waldemar Mordecai W. Haffkine, C.I.E. In 1893 he discovered a method of inoculation against cholera, and proceeded to India in order to persuade the people to use it on a large scale. In 1896, on the outbreak of plague in India, he elaborated a similar method of inoculation against that disease also. Since then over six million doses of his prophylactic have been prepared and issued by the Government of India, and it has been shown to reduce the mortality among the inoculated to one-sixth. Prophylactics against other diseases have been prepared on the same principles.

(10) Dr. Arthur Looss, Professor of Parasitology, School of Medicine, Cairo. He has done much work of great value in connection with parasitology in general. His discovery of the fact that the young of the parasites called ankylostomes, which produce fatal anæmia in thousands of persons in many tropical countries, enter the body by the skin, is one of leading importance.

(11) Dr. Theobald Smith, Professor of Comparative Pathology, Harvard University. In 1893 he discovered a new kind of blood parasite in the so-called Texas cattle fever of cattle, and also showed that it is carried from diseased to healthy animals by ticks—a work of great importance in connection with diseases both of men and animals.—*Liverpool Courier*, September 4, 1907.

NOTICE.

The following numbers of the *Lancet* being required to complete volumes in the Royal Army Medical College, Millbank, the Editor will be pleased if officers of the Corps having copies of the same to dispose of will kindly communicate with him: January 4 and 18, 1902; January 3, 1903.

AIDS TO MEMORY.

FINES FOR DRUNKENNESS.

Now drunks in the Army are bad for a man,
And always a source of expense:
Deprived of his savings, he's only excused,
A fine for his maiden offence.

His second will cost him a British half-crown,
Five bob for a third of his tricks;
If within half a year of his previous award,
The charge will be seven-and-six.

If during three months he indulges again,
No doubt over night he may sing:
He's then interviewed by his cruel C.O.,
And pays half a pound to the King.

J. D. F. DONEGAN.

FIELD AMBULANCES.

(Royal Army Medical Corps Rank and File.)

A warrior lies on the flat of his back,
Just pierced by a shot through the thigh;
The medical officer cannot be found,
In spite of his piteous cry.
So you are requested to come to his aid,
There's nobody better in view;
You're slap up against it, you cannot refuse,
The next thing is, what will you do?

Away under cover yourself and your mau,
 If possible get off his clothes ;
 And as to his ailment, remember the fact,
 He'll die if you don't diagnose.
 Arterial hæmorrhage flows from the wound,
 In gushes of bright crimson red ;
 Away from his heart as he's hit in the thigh,
 It's also away from his head.

You bandage the limb, 'twixt the wound and the knee,
 The bleeding gets visibly worse ;
 And all the onlookers who notice the fact,
 Are telling you so with a curse.
 A field tourniquet, or hand pressure above,
 Produces a better effect ;
 Arterial hæmorrhage then you remark,
 And all that you say is correct.

But if it's a vein that is injured instead,
 The blood will not gush, it will ooze ;
 The colour is darker, exactly the shade,
 You see in a Highlander's trows.
 It's flowing towards, not away from the heart,
 With pressure above 'twill increase ;
 An error on your part will probably mean,
 The warrior resting in peace.

If you apply pressure below, not above ;
 And then should the bleeding desist ;
 You see where you are, you're no longer in doubt,
 You've got your head out of the mist.
 There may be exceptions to what I have said,
 But you can but follow the rule ;
 So try and remember, and keep on your hair,
 Then no one will call you a fool.

J. D. F. DONEGAN.

SOCIÉTÉ INTERNATIONALE DE CHIRURGIE.

" MONSIEUR LE RÉDACTEUR EN CHEF, — J'ai l'honneur d'attirer votre attention sur l'Exposition du Cancer qui sera annexée au prochain Congrès de la Société Internationale de Chirurgie, lequel se tiendra à Bruxelles en Septembre, 1908. La participation à cette Exposition est ouverte aux Membres de la Société et aux savants agréés par les délégués de leur pays.

" Je vous serais très obligé d'attirer sur cette Exposition l'attention des lecteurs de votre estimable Journal.

" Conformément aux décisions de l'Association de la Presse Médicale, une carte de Membre sera mise à votre disposition.

" Recevez, Monsieur le Rédacteur en Chef, avec tous mes remerciements, l'assurance de ma considération distinguée.

" A. DEPAGE, *Le Secrétaire Général.*

" *Bruxelles, 31 Août, 1907.*"

HOMMAGE AU DR. HALLOPEAU.

Nous rappelons que la souscription ouverte par les amis et les élèves du Dr. Hallopeau, pour lui offrir une médaille exécutée par M. Chaplain, sera close le 10 novembre, 1907.

Les souscriptions sont reçues par MM. J. B. Baillière et Fils, 19 rue Hautefeuille, Tout souscripteur de la somme de 25 francs recevra une médaille.

THE ROYAL ARMY MEDICAL CORPS.

We are authorised to state the following facts for the information of intending candidates for the Royal Army Medical Corps.

The Army Medical Service, under the Royal Warrant of 1902, gives greatly increased advantages to officers of the Royal Army Medical Corps, and offers an attractive career to young medical men.

The provisions of the new Warrant insure :—

(1) Sufficient pay to enable the officer to support himself from the date of entering the Service.

(2) Increased rates of pay to officers in charge of hospitals, or when selected for specialist appointments.

(3) Opportunities of professional improvement by work in the Royal Army Medical College, by the study of disease in foreign countries and by original research.

(4) Advancement on account of professional ability and merit, and not only by order of seniority.

(5) Permission to retire at the end of three years' service, and to join the Reserve of the Corps, receiving a small annual honorarium. Permission may be given to officers of this Reserve to rejoin the Corps within a certain period.

(6) The certainty of obtaining a gratuity of £1,000 on retirement after nine years' service, and of obtaining a *pension* of £1 a day on retirement after twenty years' service, with increased rates of pension after longer terms. Pensions at higher rates are paid to officers who retire on account of injuries received when on duty.

Pensions are granted to the widows and children of officers.

THE ENTRANCE EXAMINATION.

A competitive examination for commissions in the Royal Army Medical Corps takes place twice a year, in January and July. The number of vacancies is announced before each examination, and varies from thirty to forty at each competition. After passing the ordinary physical examination for entrance into the Army, and being accepted by the Army Medical Advisory Board, the candidate comes before the Board of Examiners for the entrance examination.

The examination is conducted so as to test the candidate's practical knowledge and experience in general medicine and surgery. It is expected that candidates with a good knowledge of their profession will succeed in passing this test without the necessity for special reading in the earlier subjects of the medical curriculum. The written part of the examination consists of commentaries on cases set by the examiners and of reports on patients examined by the candidates. The *viva voce* part of the examination is of a clinical character, and includes the subjects of pathology and surgical anatomy only to the extent required in a general examination on practical medicine and surgery.

The Board of Examiners consists of eight physicians and surgeons appointed from the hospitals and medical schools of the United Kingdom.

On obtaining a place, the candidate is gazetted as a lieutenant on probation and proceeds to Aldershot, where, at the Royal Army Medical Corps School of Instruction, he receives a course of instruction for a period of two months on the military part of his future duties, such as routine medical duties in medical hospitals and barracks, the drills and exercises of the Corps, the practical work of field ambulances, military law, &c. He then passes into the Royal Army Medical College in London, where he receives a two months' course of instruction from the professors of the College in hygiene, bacteriology, military surgery, and military medical administration. He resides in the College and has the advantage of associating with other officers of the Corps. At the end of this course he is examined in the subjects of hygiene and bacteriology.

The sum of the marks gained at the entrance examination, the Aldershot examination, and the examination at the Royal Army Medical College, determines his seniority in the Army list. On qualifying at these examinations his commission as Lieutenant in the Corps is now confirmed.

The number of marks obtainable in the three examinations is as follows :—

	Maximum marks.
(1) The entrance examination by the Board of Examiners	800
(2) Examination at Aldershot	100
(3) Examination at the Royal Army Medical College	100

APPOINTMENTS IN CIVIL HOSPITALS.

If officers, at the time of entering the Corps, hold, or have an immediate prospect of holding, resident appointments at any one of the large general hospitals recognised by the Advisory Board, they may be "seconded" for the space of one year while holding such posts. They have thus the privilege of retaining their places in the Army List, and the time of tenure of the appointment is counted as service towards promotion and pension, but they do not receive Army pay.

SERVICE ABROAD.

On leaving Aldershot the Lieutenant is appointed to a military hospital, and in about a year from the date of joining he will proceed to India or to one of the Colonies, and will probably be attached to a battalion, regiment, or other unit. This opportunity of proceeding abroad is usually regarded as one of the most pleasant episodes in the medical officer's career. He sees fresh countries and life under new conditions, and has the opportunity of securing the confidence of his military charge and of gaining experience in practice. In addition to the experience afforded by the military hospitals under his immediate care there are in India, and in most of the colonies, civil hospitals where facilities for observation are never denied him, and where he can study the diseases peculiar to the countries in which he may serve. In the same way as an officer of the Indian Medical Service he is permitted to engage in civil practice, which, in some stations, affords him a considerable increase of income. Such private practice is also permitted in colonial stations.

Until recently there was much well-grounded complaint of the inadequacy of the pay of the British medical officer in India, but with the augmentation sanctioned by recent regulations this ground of complaint no longer exists. The pay of the young officer goes further abroad than it does at home, and in India and elsewhere it is sufficient to enable him to live comfortably and to take part in the sports and amusements of his brother officers.

PROMOTION TO CAPTAIN.

At the end of three and a half years after joining the Royal Army Medical College the officer, after passing a practical examination in the military duties of his rank, is promoted to be Captain. On completing his tour of foreign service of three or five years, according to the period of his station, he returns home, and during his home service is appointed to the Royal Army Medical College for a course of six months' study. This is largely occupied in attendance on the clinical practice of various London hospitals, under selected clinical teachers in medicine, surgery, and in certain special subjects.

PROMOTION TO MAJOR.

At the end of this course of instruction the Captain is ready for his examination for promotion to the rank of Major. This examination, like the entrance examination, is of as practical a character as possible, and includes general medicine and surgery, bacteriology and hygiene, and a special subject chosen by the candidate. This examination forms a very important event in his career in the Army. An officer who shows special proficiency at this examination may gain acceleration of promotion to the extent of three months, six months, twelve months, or eighteen months, and those who have shown aptitude in the special subjects chosen in their examination may be subsequently selected to hold specialist appointments at various Army centres, receiving increased pay at the rate of about £45 per annum.

The officer, after from ten and a half to twelve years' service from the date of entering the Royal Army Medical College, and on qualifying at this examination, is promoted to the rank of Major, and various important and responsible appointments become open to him. After completing a period of home service he proceeds on his second tour of service abroad and will be in all probability posted to a position of responsibility, when his pay and allowances will amply meet all his needs.

PROMOTION TO LIEUTENANT-COLONEL.

After the fifteenth year of service the officer proceeds to his last examination, which deals with those purely military subjects with which he has gradually become familiar during his career. This examination is also of a practical character, and is intended to ascertain his administrative ability in view of further promotion.

After passing this examination the officer becomes eligible for selection to the rank of Lieutenant-Colonel. Officers of this standing occupy prominent positions in the

Army; they command the Depôt at Aldershot, they form the Staff of the Director-General, they have the charge of large hospitals, and may become entitled to a very considerable increase in pay, amounting in some cases to as much as £180 a year. After twenty years' total service the officer may retire upon a pension of £1 per diem.

PROMOTION TO COLONEL.

Promotion to the rank of Colonel is made by selection from Lieutenant-Colonels. Colonels are promoted on selection to the rank of Surgeon-General, and from the Surgeon-Generals the Director-General is appointed.

BREVET PROMOTION FOR DISTINGUISHED SERVICE.

Brevet promotion, which implies advancement in Army rank as distinguished from regimental rank, as in other branches of the Service, is now granted to medical officers for distinguished service in the field and for distinguished service other than in the field, such as distinction in original investigation and research.

OFFICERS ELIGIBLE FOR SPECIAL HONOURABLE RECOGNITION.

The officers of the Royal Army Medical Corps are eligible for military honours and rewards at the hand of the Sovereign, and there are six honorary physicians and six honorary surgeons to the King appointed from among the officers of the Royal Army Medical Corps.

It is worthy of notice that a considerable number of Victoria Crosses have been awarded to medical officers for valour.

EXPENSES, SPECIAL ADVANTAGES, PAY.

The expenses of all officers have been considerably reduced as the result of recent legislation, by which the Government provides furniture in their quarters at a low rent, gives them a free field service, outfit, &c.

The medical officer has, in common with all other officers of the Army, the following advantages, viz., the occupation of Government quarters, or allowance in lieu thereof; military precedence, according to seniority; horse allowance when mounted; the employment of soldiers as servants; honorary membership of messes, &c.

In large stations, such as Aldershot, Netley, London, Rawal Pindi, Lucknow, &c., there are messes of the Royal Army Medical Corps.

PAY IN INDIA.

	Rupess per mensem.
Lieutenants	420
Captains	475
After seven years' service	530
" ten " " " " " " "	650
Majors	789
After fifteen years' service	826
Lieutenant-Colonels	1,150
Specially selected	1,250
Charge pay, from 60 rupees to 240 rupees per mensem, according to size of hospital	
Specialist pay	60

Captains and Majors, after qualifying in special subjects, if appointed specialist, draw 2s. 6d. a day (£45 12s. 6d. per annum, 60 rupees per mensem in India) in addition to pay.

Charge pay up to £180 per annum (240 rupees per mensem in India), according to number of beds, is given to officers in charge of military hospitals.

The following are examples of emoluments which may be obtained by medical officers of various ranks :—

Captain (say of ten years' total service)—

							£	s.	d.
Pay and allowances	..	..	..	..	..	..	472	9	3
Specialist pay	..	..	..	..	..	..	45	12	6
Charge pay	..	..	..	..	..	..	45	12	6
							<u>£563</u>	<u>14</u>	<u>3</u>

PAY AND ALLOWANCES OF MEDICAL OFFICERS AT HOME.

Rank	PAY		SERVANT ALLOWANCE		LODGING ALLOWANCE		FUEL AND LIGHT ALLOWANCE		FORAGE AND STABLEING ALLOWANCES			TOTAL PER ANNUM
	Per diem	Per annum	Per diem	Per annum	Per diem	Per annum	Per diem	Per annum	Per diem	Per annum	Per annum	
	£ s. d.	£ s. d.	s. d.	£ s. d.	s. d.	£ s. d.	s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.	£ s. d.
Lieutenant and Lieutenant on probation	0 14 0	255 10 0	1 0	18 5 0	2 3	41 1 3	(average) 0 7 ² / ₃	11 2 11 ² / ₃	—	—	—	325 19 2 ¹ / ₃
Captain	0 15 6	282 17 6	1 0	18 5 0	3 0	54 15 0	0 10 ² / ₃	16 4 3	—	—	—	372 1 9
And after seven years' full pay	0 17 0	310 5 0	1 0	18 5 0	3 0	54 15 0	0 10 ² / ₃	16 4 3	—	—	—	399 9 3
And after ten years' full pay	1 1 0	383 5 0	1 0	18 5 0	3 0	54 15 0	0 10 ² / ₃	16 4 3	—	—	—	472 9 3
Major	1 3 6	428 17 6	1 0	18 5 0	4 0	73 0 0	1 2 ² / ₃	22 5 10	2 3	41 1 3	—	583 9 7
Major after three years' service as such	1 6 0	474 10 0	1 0	18 5 0	4 0	73 0 0	1 2 ² / ₃	22 5 10	2 3	41 1 3	—	629 2 1
Lieutenant-Colonel	1 10 0	547 10 0	1 0	18 5 0	4 6	82 2 6	1 2 ² / ₃	22 5 10	2 3	41 1 3	—	711 4 7
Lieutenant-Colonel after three years' service	1 15 0	638 15 0	1 0	18 5 0	4 6	82 2 6	1 2 ² / ₃	22 5 10	2 3	41 1 3	—	802 9 7
Colonel	2 5 0	821 5 0	1 0	18 5 0	5 6	100 7 6	1 6 ¹ / ₃	27 17 4	2 3	41 1 3	—	1,008 16 1
Surgeon-General ..	3 0 0	1,035 0 0	2 0	36 10 0	11 0	200 15 0	2 1	38 0 0	4 3	77 11 3	—	1,447 16 3

Major (say of ten and a half years' total service)—

							£	s.	d.
Pay and allowances	..	..	..	..	..	..	583	9	7
Specialist pay	..	..	..	..	..	..	45	12	6
Charge pay	..	..	..	..	from £91 5s. to		182	10	0
							£811	12	1

Lieutenant-Colonel (say of eighteen and a half years' total service)—

							£	s.	d.
Pay and allowances	..	..	..	..	..	..	711	4	7
Charge pay	..	..	..	..	from £91 5s. to		182	10	0
							£893	14	7

If Commanding Depôt, Royal Army Medical Corps, extra pay of £92 per annum is given.

Lieutenant-Colonel (after three years in the rank)—

							£	s.	d.
Pay and allowances	..	..	..	..	..	..	802	9	7
Charge pay	..	..	..	..	..	..	182	10	0
							£984	19	7

Professors at the Royal Army Medical College receive pay and allowances for rank, plus £200 per annum.

Assistant professors at the Royal Army Medical College receive pay and allowances of rank, plus £80 per annum.

Officers can retire at the following periods and obtain the several gratuities and pensions enumerated:—

Gratuity—

After 5 years' service as Captain	..	..	..	..	..	..	£1,000
„ 3 „ „ Major	..	..	..	..	..	..	1,800
„ 6 „ „ „	..	..	..	..	..	..	2,500

Pension—

							Per diem	Per annum
							£ s. d.	£ s. d.
Major	..	..	..	..	..	..	1 0 0	365 0 0
Lieutenant-Colonel—								
After 20 years' service	..	..	..	..	..	..	1 0 0	365 0 0
„ 25 „ „	..	..	..	..	..	..	1 2 6	410 12 6
„ 28 „ „	..	..	..	..	..	..	1 7 6	501 17 6

Colonel—

Under 4 years' service as such, but with 30 years' total service	..	..	..	..	..	..	1 10 0	547 10 0
After 4 years' service as such	..	..	..	..	..	..	1 15 0	638 5 0
Surgeon-General after 3 years' service	..	..	..	..	..	..	2 0 0	730 0 0

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

FINANCIAL STATEMENT BY THE BUSINESS MANAGER FOR THE FOURTH YEAR, 1906-07.

FINANCIALLY the fourth year's working of the JOURNAL OF THE ROYAL ARMY MEDICAL CORPS has been a very prosperous one. On comparing the Balance Sheet of the third year (1905-06) with that of the fourth year (1906-07), it will be seen that our total assets have grown from £994 2s. 11d. to £1,235 19s. 3½d., an increase of £241 16 4½d., in spite of the fact that during the latter year (1906-07) we have received no grant from Government sources, which during the first three years amounted to £300 per annum. On July 1, 1907, the only outstanding claim against the Journal Funds was an item of £295 10s 1d., due to the publishers for the issues of the Journal during the last quarter of the year, i.e., April, May and June, 1907. Against this the Balance Sheet shows total assets to the value of £1,531 9s. 4d., nearly the whole of which is held as liquid cash.

BALANCE SHEET.

LIABILITIES.

Publishers' Bills for Quarter ending June 30, 1907 .. £ s. d. 295 10 1

Balance Credit... .. 1,235 19 3¹
£1,531 9 4³

ASSETS.

National War Loan Bonds £694 16 0
 Balance at Bank on July 1, 1906. Current Account.. 117 14 9
 " " " " Deposit Account .. 300 0 0
 Balance profit on this Year's Working 322 12 2
1,435 2 11

This Balance is held as follows :

National War Loan Bonds £694 16 0
 July 1, 1906. Deposit Account £300 0 0
 Aug. 2, 1906. Placed on Deposit.. .. 600 0 0
£900 0 0

Feb. 27, 1907. With-drawn from Deposit Account £100 0 0
 June 5, 1907. Ditto 100 0 0
200 0 0

Current Account at Bank, July 1, 1907 .. £700 0 0
40 6 11
£1,435 2 11

Credit Business Manager's Contingent Account 0 12 8
 Furniture 43 14 9¹
 Less 10 % fair wear and tear 4 7 5¹
 Subscriptions not paid on July 1, 1907 39 7 3³
 Reprints 5 0 0
 Sale of Copy of Journal not paid on July 1, 1907 2 0 9
 Advertisements for Quarter ending June 30, 1907 0 2 0
 49 3 9
£1,531 9 4³

Audited and found correct,

August 12, 1907.

H. E. R. JAMES, Colonel, R.A.M.C.,
 ANDREW CLARK, Surgeon-Colonel, V.M.S.

Our actual cash credits on July 1, 1907, amounted to £1,435 2s. 11d., held as follows:—

National War Loans Bonds	£694 16 0
On Deposit at Holt and Co.	700 0 0
At Current Account at Holt and Co.	40 6 11

together with a sum of 12s. 8d. in stamps at the credit of the Contingent Account. In addition, sums of £49 3s. 9d., £5, £2 0s. 9d., and 2s. are shown against advertisements, unpaid subscriptions, reprints, sale of copy of Journal, all of which, with the exception of £4 for subscriptions, £1 16s. 3d. for reprints, and 2s. for Journal, have since been recovered. The only other item mentioned in the Balance Sheet is a sum of £39 7s. 3½d., representing the value of the various articles included under the heading of Office Furniture. It will be noticed that these items are valued at a 10 per cent. depreciation on last year's valuation.

On comparing our Trading Account of the last year with that of the previous year we find that an increase of £183 7s. 5d. in total receipts is shown under the following sub-heads:—

Advertisements, Sales through Manager, Sales through Publishers, Interest on War Loan Bonds, Interest on Deposit Account.

While a total decrease of £371 11s. 11d. is indicated by the following items:—

Subscriptions to Journal, Subscriptions to Corps News, Subscriptions to Seniority Roll, Reprints, Binding, and Items which occurred in third year and not in fourth year.

Thus, our total income for the year 1906-07 amounts to a sum of £188 4s. 6d. less than that of the previous year. This sum, however, must not be interpreted to mean an actual decline in the support of the Journal.

Decreases.—Thus a decrease of £11 1s. 4d. shown against subscriptions to the Journal does not indicate that the number of the subscribers are any the less than those for the previous year, but that these figures represent the actual money received during the past year. As a matter of fact, there were 1,130 subscribers during 1905-06, while the number for 1906-07 was 1,141, or an increase of eleven. The discrepancy between the amount of subscriptions received during the year and the actual number of subscribers is due mainly to the irregular periods at which members commence their annual subscriptions, and as a consequence the subscription for one year is credited in some instances to the account of the previous year, depending on the Journal year during which the payment is made.

The following list gives a detail of the subscribers held on our books for the year 1906-07:—

Active List	910	N.C.O., R.A.M.C.	1
Retired List	132	Malay States Guides	1
Militia	10	Canadian Permanent Med. Corps	1
Yeomanry	2	Various (Civilian)	31
Volunteers	49		
Royal Navy	1		1,141
Indian Medical Service	3		

During the first year there were 1,101 subscribers, of these 65 were struck off the subscribers' list before the commencement of the second year. In the second year 59 fresh names were added, making a total of 1,095 subscribers during that year. At the end of the second year 79 names were removed, and the Journal commenced its third year with 1,016 subscribers. Before the commencement of the fourth year 114 fresh names were added to the list. At the termination of the third year 61 casualties had occurred, leaving 1,069 subscribers at the commencement of the fourth year. In the fourth year 72 new members were added, and 35 had ceased to subscribe, leaving 1,106 subscribers at the commencement of the fifth year. The various changes may be indicated as follows:—

Subscribers during first year	1,101
Casualties at the termination of first year	65
Subscribers at beginning of second year	1,036
Additions during second year	59
Subscribers at termination of second year	1,095
Casualties at termination of second year	79
Subscribers at beginning of third year	1,016
Additions during third year	114

Subscribers at termination of third year	1,130
Casualties at termination of third year	61
Subscribers at beginning of fourth year	1,069
Additions during fourth year	72
Subscribers at termination of fourth year.. .. .	1,141
Casualties at termination of fourth year	35
Subscribers at beginning of fifth year	1,106

The income for subscription to CORPS NEWS shows a decrease of £24 10s. 4d., though the number of subscribers remains practically the same. A similar cause operates in this case as in that of the subscribers' list of the Journal, and as far as it is possible to do so steps are being taken to arrange for a uniform date for the commencement of all subscriptions both to the Journal and CORPS NEWS in order to approximate the figures representing the actual number of subscribers for each year and the annual income from this source.

The decrease of £11 11s. 5d. against subscriptions to Seniority Roll does not represent a loss on the publication of these issues. The Seniority Rolls are issued in May of each year, and as a consequence the majority of subscribers do not effect payment until after commencement of the following year (*i.e.*, after July 1), thus credits on the previous year are shown largely in the accounts of the following year. The publication of the Seniority Roll for 1905 resulted in a loss of £4 5s. 6d. and that of 1906 in a loss of 12s. 6d., due entirely to the loss of twenty-five copies despatched by post and lost in transit, while it is anticipated that the latest issue (1907) will result in a small profit. Prior to the publication of each issue an attempt is made to obtain a rough estimate of the number of copies of the Seniority Roll likely to be required, by sending circular letters to each command and district at home and abroad, so as to avoid, if possible, the publication of an excessive number of copies, but the margin of profit is so small that a slight miscalculation may lead to a loss, as happened in the first year of issue. The decrease in receipts represented against reprints and binding is not an actual loss in the strict sense of the word, as the sums received for these items equal their cost of issue; the amount, therefore, has no influence on the profits and losses of the Journal. The decreases shown under the heading "Items which appeared in the third year and which did not appear in the fourth year" include payments for special blocks, plates, and postages from officers who last year contributed in part towards the illustrations of their articles, in addition to a Government Grant which was withdrawn on July 1 of last year (1906). During the past year no special illustrations were required. The only other item under this heading was the repayment of the cost of publication of the Accounts of the Benevolent Society, which during the past year was published in the Journal free of charge.

Increases.—Among the items contributing towards an increase of revenue is the sum of £149 1s. 1d. under the heading "Sales through Publishers." During the previous year the amount received from this source was £51 2s. 10d., while in the year under review the total reached £200 2s. 11d. The increase is due to the augmented sales of the Journal in America and to the receipt of two years' subscriptions from our American subscribers.

The items "Interest on War Loan Bonds" and "Deposit Account" both show an increase, the interest on War Loan Bonds being for one quarter more than in the previous year, and the increase in the interest on the deposit account being due to the fact that the money was placed on deposit earlier than in the previous year, and also because a lesser sum had to be withdrawn to meet current expenditure.

In the expenditure side of our Trading Account is included a payment of £1,202 9s. 4d. to the Publishers, being a decrease of £251 over that of last year.

The Contingent Account amounts to £38 15s., an increase of £6 2s.

A sum of £114 0s. 9d. was paid to the Editor, an excess of £14 0s. 9d. over that of last year.

The expenditure of £5 to the Clerk in the Record Office for the preparation of the Seniority Roll is an annual recurring fixed sum.

The refund of £3 2s. 8d. shown against the Benevolent Society was a sum paid by them for the publication of the minutes, &c., of their annual meeting in the Journal, and which the Journal Committee subsequently decided should be published free of charge.

The remaining items referring to charges for exchanges on drafts and bank postages are small amounts over which we have no control.

Various other items of expenditure which occurred in the third year but which do not appear in the Trading Account of the fourth year, amounted to a sum of £32 2s. 4d.

Taking the expenditure as a whole for the year 1906-07, and comparing it with that for the previous year, we find a total saving of £259 16s. 11d. has been effected. It has been shown that when compared with the previous year our total income during 1906-07 has decreased by £188 4s. 6d., and our expenditure by £259 16s. 11d., leaving an additional credit balance on the year's working costs of £71 12s. 5d. In other words, while a total profit of £250 19s. 9d. was shown in the Trading Account for 1905-06, a profit of £322 12s. 2d. has been realised during the year 1906-07. The large decrease of £251 in the Publishers' Accounts of the fourth year over that for the third year is mainly due to our having limited the monthly charges for the letterpress and illustrations to a maximum sum of £95, exclusive of the incidental costs of loose copies of Corps News, reprints, &c., which are met by repayments. In considering the various items of the Publishers' bill, it will be seen that we paid £1,132 16s. towards the cost of the publication of the Journal during the third year, while the amount for the fourth year only totals £878 4s. 11d., a reduction of £254 11s. 1d. This was mainly effected by reducing the number of plates, blocks, charts, drawings, &c., the charges under this heading being £239 4s. 3d. for the third year and £85 18s. for the fourth year, a saving of £153 5s. 3d.

The increase of the Contingent Account is due to the fact that the Clerk to the Business Manager was only paid from the Contingent Account for nine months during 1905-06, and for the full year during 1906-07. The increase of £14 0s. 9d. in the Honorarium to the Editor is due to the Government Grant, from which the Editor was originally paid, having expired in May, 1906, thus leaving a small broken period in excess of a year for which payment was made.

Our unpaid claims for the third year amounted to £15 7s., while for the fourth year a sum of only £7 2s. 9d. is outstanding. The whole amount due for the third year was eventually recovered, and it is hoped that the £7 2s. 9d. for the fourth year will, in due course, be likewise credited to the Journal funds.

(Signed) H. J. M. BUIST, Major, R.A.M.C.,
Hon. Manager, "Journal R.A.M.C."

ARMY MEDICAL OFFICERS' BENEVOLENT SOCIETY.

PROCEEDINGS of a Committee Meeting held at the War Office at 3 p.m., Thursday, October 17, 1907.

Present.

Colonel T. Ligertwood, C.B., Vice-President, in the Chair.

Surgeon-General C. A. Innes.

Colonel J. Lane Notter.

Colonel A. T. Sloggett, C.M.G.

Lieutenant-Colonel A. M. Davies.

Lieutenant-Colonel W. G. Macpherson, C.M.G.

Lieutenant-Colonel A. B. Cottell.

(1) The Minutes of the last Committee Meeting were read and confirmed.

(2) It was resolved to invest the sum of £200 in Consols, and the Secretary was directed to request the Bankers to carry out the investment in the names of the Trustees to the Society.

(3) It was resolved that a sum not exceeding 10s. per week be allowed to the Secretary for clerical assistance, in conjunction with an equal amount from the Royal Army Medical Corps Fund.

(4) The following cases were then considered for grants, with the results as stated :—

(a) Two orphan daughters of Lieutenant-Colonel H. J. P., £16.

(b) The widow of E. W., no grant.

- (c) The orphan daughter of W. L. H., no grant.
 (d) The orphan daughter of W. H. C., referred to the next meeting.
 (e) The orphan daughter of T. B., in employment, no grant.

F. W. H. DAVIE HARRIS, *Lieutenant-Colonel,*

St. George's Barracks, W.C.

Secretary.

ROYAL ARMY MEDICAL CORPS FUND.

THE Thirty-First Meeting of the Committee was held at the War Office at 3.30 p.m., on Thursday, October 17, 1907.

Present.

Surgeon-General Sir Alfred Keogh, K.C.B., Director-General, in the Chair.

Surgeon-General Sir Thomas Gallwey, K.C.M.G.

Surgeon-General W. Fawcett, C.B.

Colonel A. T. Sloggett, C.M.G.

Colonel Sir James Clark, Bart., C.B.

Lieutenant-Colonel E. M. Wilson, C.B., C.M.G., D.S.O.

Lieutenant-Colonel A. B. Cottell.

Major H. C. Thurston, C.M.G.

Major C. G. Spencer.

Captain H. R. Bateman.

Captain A. Bruce.

(1) The Minutes of the last Meeting were read and confirmed.

(2) It was resolved to endow a prize in Pathology to the memory of the late Lieutenant F. H. G. Tulloch, R.A.M.C., to take the form of a bronze medal, to be competed for at each Session at the College by Lieutenants on probation of the Royal Army Medical Corps. A sum not to exceed £100 was voted for this object, and a sub-committee of the following was appointed with power to act and report to the next meeting: Lieutenant-Colonel E. M. Wilson, C.B., C.M.G., D.S.O.; Major H. C. Thurston, C.M.G., and the Secretary.

(3) It was resolved that inscribed tablets, at a price not exceeding 7s. 6d. each, be placed on all the paintings in the College.

(4) The rules drawn up by the Sub-Committee appointed at the last meeting for Local Honorary Secretaries were read and approved, and are appended to these minutes.

(5) A resolution passed by the Aldershot Sub-Committee, that "The Sub-Committee should be abolished," was then discussed, and finally adopted by this meeting, and the following proposals were approved: (a) In future the General Relief Fund will be distributed by the Secretary; (b) Applications for relief should be made out on the General Relief Forms and forwarded by Principal Medical Officers of Commands and Administrative Medical Officers of Districts, or by the Officer-in-Charge of Records, to the Secretary of the Royal Army Medical Corps Fund, who will distribute such relief as the funds will allow; (c) In no case shall a sum exceeding £2 in any quarter be given by him; (d) The total amount of relief by him should, for the present, be limited to £40 a quarter; (e) For special cases requiring a grant beyond £2, the Secretary shall refer the case to the next Committee Meeting; (f) The Secretary shall keep a register of all cases receiving relief, this register shall show the amount of relief given in each case, and shall be placed before the Committee quarterly for confirmation.

(6) It was resolved that a sum not exceeding 10s. a week be allowed to the Secretary for clerical assistance.

(7) It was noted that the following sums have been received for the General Relief Fund for the quarter ending September 30:—

		£	s.	d.
No. 1	Depôt Companies, Aldershot	..	52	10 0
"	12 Company, Woolwich	..	2	10 0
"	33 " Cairo	..	6	10 0
	Detachment, Harrismith	..	5	0 0
	Sergeants' Mess, Cairo	..	5	0 0
	N.C.O's. and men, Edinburgh	..	4	19 0

BALANCE SHEET FOR QUARTER ENDING SEPTEMBER 30, 1907.

(Signed) E. T. F. BIRRELL, Major,
Band President, R.A.M.C.

Aldershot,
October 5, 1907.

ROYAL ARMY MEDICAL CORPS COMPASSIONATE (GENERAL RELIEF) FUND.

BALANCE SHEET FOR THE QUARTER ENDING SEPTEMBER 30, 1907.

RECEIPTS.			EXPENDITURE.		
Date. 1907.	From whom received.	On what account.	Date. 1907.	To whom paid.	On what account.
July 16.	Balance Credit last Quarter	.. .. 25 10 1	July 1.	Various ..	Disbursements to 21
	Secretary, R.A.M.C.		to		Cases requiring
	Funds	Grant 90 0 0	Sept. 30.		Monthly Relief .. 77 16 0
Sept. 5.	Treasurer, Sergeants' Mess, Cairo	Subscription to Com- passionate Fund .. 5 0 0	July 15.	Mrs. Chown ..	Grant 6 0 0
			" "	Mr. Winfield	" 0 10 0
			Aug. 21.	" "	" 0 5 0
			July 6.	Mr. Sewell ..	" 1 0 0
			Aug. 3.	" "	" 1 0 0
			" "	Mr. Hedge ..	" 1 0 0
			" 7.	Mr. Cracknell..	" 1 5 0
			" 20.	Private Combs	" 1 0 0
			" 28.	Private Shelton	" 3 0 0
			Sept. 7.	Mrs. Sowden ..	" 3 0 0
			" 4.	Secretary, R.A.M.C. Fund	Subscription to Com- passionate Fund.. 5 0 0
			Sept. 30.	Sergeant Baxter	Clerk 0 10 0
			" "	" "	Postage 0 6 4
			" "	Capital and Co., Bank	Cheque Book .. 0 5 0
			" "	Balance at Bank	" 18 12 9
				Total ..	..£120 10 1

(Signed) E. T. F. BIRRELL, Major, Hon. Secretary.

Aldershot,
September 5, 1907.

ROYAL ARMY MEDICAL CORPS COMPASSIONATE FUND.

The following have received relief during the Quarter ended September 30, 1907:—

GENERAL RELIEF FUND.

Name of recipient	Age	Number of children	If in receipt of pension. Amount	Monthly grant from Fund	Total amount received from Fund	Remarks
Mrs. C.	30	1	No	120s.	£6	Granted £6 to enable her to join husband in Canada.
Mr. W.	63	..	8d. per day	15s.	15s.	Destitute; in want of food. 10s. given him to enable him to get to London; 5s. advanced by Col. Cree afterwards.
Mr. S.	33	4	2s. 6d. per day	40s.	£2	Unable to get work; wife confined, in debt. £2 granted for immediate necessities.
Mr. C.	..	..	No	25s.	£1 5s.	Temporary relief pending employment; no further relief required.
Mr. H.	46	8	No	20s.	£1	Man is suffering from gauglion; only one child supporting herself. Grant given for immediate necessities.
Pte. C.	..	1	No	20s.	£1	Wife dead, child has to be put out to nurse at 10s. per week. Grant made to assist father to support child.
Pte. S.	25	..	No	60s.	£3	Granted £3 to send him to a Convalescent Home (tubercle).
Mrs. S.	40	2	No	20s.	£18	Granted £3 for immediate necessities, and £1 a month for six months. Wife of 5844 Pte., now in a lunatic asylum.
Mrs. C.	63	1*	No	20s.	£20 10s.	*Married. Widow of 608 Lance-Sergt., indifferent health, past work. From 30s.
Mrs. C.	40	2	No	35s.	£102 15s.	Widow of a Private; suffers from rheumatism. Reduced from £2.
Mrs. G.	40	5	No	30s.	£36	Widow of Lce.-Corpl. Three children under 10 years dependant on woman.
Mrs. S.	50	..	No	20s.	£6	Widow of 2296 Pte., unable to obtain employment. Discontinued.
Mrs. R.	46	1	No	30s.	£103 10s.	Widow of 2512, A. H. Corps; in delicate health. Reduced from £2.
Mrs. I.	63	..	No	20s.	£68	Widow of 1255 Lance-Sergt. Reduced from 30s.
Mrs. S.	62	..	No	30s.	£78	Widow of a Corporal; decrepit and blind.
Mrs. G.	51	4	No	20s.	£50 10s.	Widow of 2737 Private. Youngest child 14. Receives 5s. a month from one son, 15s. for past six months from another. Suffers from bad health. Reduced from 30s.
Mrs. H.	61	2	No	20s.	£39 10s.	Widow of 1721 Private, in poor health. Has to support grown-up daughter only earning 3s. per week. Reduced from 30s.
Mrs. D.	55	..	No	20s.	£9	Widow of 1603 A. H. Corps, unable to work.

GENERAL RELIEF FUND.—*Continued.*

Name of recipient	Age	Number of children	If in receipt of a pension. Amount	Monthly grant from Fund	Total amount received from Fund	Remarks
Mrs. M.	42	5	No	20s.	£42	Widow of Sergt.-Major. One child in service, four in homes. Suffers from varix. Not able to work.
Mrs. P.	37	3	No	40s.	£28	Widow of 7223. Discontinued, unnecessary.
Mrs. S.	38	3	9s. 6d. weekly	15s.	£105	Widow of a Private, in delicate health. One child in Royal British Female Hospital.
Mrs. S.	65	..	No	15s.	£73 15s.	Widow of Staff-Sergt., earns about 1s. per diem. Reduced from 30s.
Mrs. K.	68	..	No	20s.	£68 10s.	Widow of pensioner, too old to work, chronic rheumatism and debility. Reduced from 30s.
Mrs. B.	76	5*	No	15s.	£19 15s.	*Grown up. Has 4s. 6d. allowed weekly by one son. Widow of a Sergt.-Major, not able to earn anything. Reduced from £1.
Mrs. K.	45	2	No	20s.	£24	One child in Patriotic School. Widow of Private. Reduced from £2.
Mrs. W.	30	2	No	12s.	£4 18s.	Widow of 8515 Private. Granted to assist in maintenance of youngest child.
Mr. N.	43	4	No	30s.	£44 10s.	Two children kept by relatives, one girl of 19 earns her own living. Unable to work, almost blind. Reduced from £2.
Mr. L.	36	3	No	20s.	£7	Granted for the support of youngest child. Discontinued, man earning good money.
Mrs. B.	48	4	No	20s.	£9 4s.	Unable to get work. Widow of Private. Granted £1 per month for six months.

Aldershot,
October 5, 1907.

(Signed) E. T. F. BIRRELL, Major,
Hon. Secretary.

(8) The accounts of the Aldershot sub-Committee for last quarter were then considered and adopted and accompany these Minutes. A sum of £126 was voted for the Band; and the retirement of the Bandmaster was approved.

(9) A Statement of the Income and Expenditure of the Compassionate Funds was then considered; on the proposal of the Chairman, seconded by Colonel Sir James Clark, Bart., the following sub Committee was appointed to report at the next Meeting on the present financial position of the various funds and to make recommendations: Surgeon-General W. Fawcett, C.B.; Lieutenant-Colonel E. M. Wilson, C.B., C.M.G., D.S.O.; Major C. G. Spencer, and the Secretary.

F. W. H. DAVIE HARRIS, *Lieutenant-Colonel,*
Secretary.

St. George's Barracks, W.C.

RULES FOR THE GUIDANCE OF LOCAL HONORARY SECRETARIES.

(1) Ascertain if all the officers in the station are subscribers to the Fund and to the Army Medical Officers' Benevolent Fund, and endeavour to get them to join. Banker's forms may be obtained from the Secretary, St. George's Barracks, W.C.

(2) Investigate cases requiring relief from the General Relief Fund.

(3) Keep a book with a full record and history of all cases applying for General Relief, and complete the forms in triplicate for those recommended for grants.

(4) Act as Secretary to the Principal Medical or Administrative Medical Officer of the station on all matters relating to either the Royal Army Medical Corps Fund, or the Army Medical Officers' Benevolent Society.

(5) In case of doubt of any kind communicate with the Secretary, Royal Army Medical Corps Fund, St. George's Barracks, W.C.

(6) Take a general interest in all matters connected with the Fund.

BIRTHS.

LOW.—On August 31, at St. Thomas' Mount, Madras, the wife of Lieutenant N. Low, Royal Army Medical Corps, of a son.

MORPHEW.—At Kailana, on September 17, 1907, the wife of Major E. M. Morphey, Royal Army Medical Corps, of a son.

MARRIAGES.

CUNNINGHAM—WINZER.—September 17, at St. John's Church, Westminster, by the Rev. Montgomery Baldwin, Robert Allan Cunningham, Captain, Royal Army Medical Corps, second son of R. A. Cunningham, Esq., of Ballybofey and Summer Hill, County Donegal, to Hope Caroline, youngest daughter of the late J. E. Winzer, Esq., of Hamburg.

DANSEY-BROWNING—STODDART.—On September 25, at St. James, Sussex Place, W., by the Rev. J. H. D. Macdonald, George Dansey-Browning, Major, Royal Army Medical Corps, to Lilian, youngest daughter of Colonel C. Stoddart, Indian Army.

FITZGERALD—WATSON.—On September 28, at St. Paul's, Portman-Square, by the Rev. Dr. Griffith Thomas, assisted by the Rev. J. Stephens, Fitzgerald G. Fitzgerald, Captain, R.A.M.C., second son of Wyndham-Quin Fitzgerald, Esq., Glenowen, Co. Wicklow, to Emily Gosselin (Lillie), only daughter of the late Lieutenant-General G. Vincent Watson, and Mrs. Watson, York-terrace, Regent's Park, N.W.

GEDDES—WHYTE.—At the Congregational Church, Helensburgh, on October 22, by the Rev. W. Blair, Lieutenant-Colonel Robert J. Geddes, D.S.O., Royal Army Medical Corps, to Christiana Gowans, third daughter of the late John G. Whyte, and Mrs. Whyte, Eastwood, Helensburgh.

DEATH.

BOYD.—On June 3, at Greystones, Co. Wicklow, Honorary Deputy-Surgeon-General William Cathcart Boyd, Brigade-Surgeon, retired Army Medical Staff, aged 72 years. He entered the Service January 22, 1858; was promoted Surgeon March 1, 1873; Surgeon-Major April 1, 1873; and Brigade-Surgeon September 8, 1883; retiring with honorary rank of Deputy-Surgeon-General January 21, 1885. His war services were as follows:—Indian Mutiny, 1858.—Battles of Rajgurn and Bereu. Medal. Afghan War, 1879-80.—With the Kuram Division; and was Principal Medical Officer of the Zaimusht Expeditionary Force, and present at the capture and burning of Zawa. Mentioned in Despatches. Medal.

CORRECTION.

ON p. 96 of the Corps News for October, 1907, the rank of the correspondent of the "Notes from Nairobi, British East Africa," should read "Quartermaster-Sergeant," and not "Quartermaster."

EXCHANGE.

The charge for inserting Notices respecting Exchanges in the Royal Army Medical Corps is 5/- for not more than five lines, which should be forwarded by Cheque or P.O.O., with the notice, to Messrs. G. STREET and CO., Ltd., 8, Serle Street, London, W.C., not later than the 22nd of the month.

NOTICE TO SUBSCRIBERS.

Letters regarding non-delivery of the Journal, or change of address, should be sent to the "Manager, Journal of the Royal Army Medical Corps," War Office, Whitehall, London, S.W., not later than the 25th of each month.

It is requested that all Cheques or Postal Orders for Subscription to the Journal, Corps News, Reprints, &c., be made payable to the "Manager, Journal R.A.M.C.," and not to any individual personally.

The Editor will be glad to receive original communications upon professional subjects, travel, and personal experiences, &c. He will also be glad to receive items of news and information regarding matters of interest to the Corps from the various garrisons, districts and commands at home and abroad.

All such Communications or Articles accepted and published in the "Journal of the Royal Army Medical Corps" will (unless the Author notifies at the time of submission that he reserves the copyright of the Article to himself) become the property of the Library and Journal Committee, who will exercise full copyright powers concerning such Articles.

Matter intended for the Corps News should reach the Editor not later than the 15th of each month for the following month's issue. All these communications should be written upon one side of the paper only, they should by preference be type-written, but, if not, all proper names should be written in capital letters (or printed) to avoid mistakes, and be addressed The Editor, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, War Office, Whitehall, London, S.W.

Communications have been received from Colonel R. H. Forman. Lieutenant-Colonels J. F. Donegan, R. J. C. Cottell. S. Westcott, C.M.G., W. G. Macpherson, C.M.G., A. M. Davies, and W. W. Pike, D.S.O. ; G. F. Poynder (R.P.). Majors F. Kiddle, K. B. Barnett, W. D. Erskine, M. P. Holt, D.S.O., and J. G. McNaught. Captains C. F. Wanhill, J. E. Hodgson, W. S. Crosthwait, G. J. S. Archer, L. W. Harrison, L. Bousfield, R. T. Brown, W. J. Waters and N. E. Harding. Professor R. Ross, C.B., F.R.S., and Dr. Geo. Deane.

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JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

Corps News.

DECEMBER, 1907.

ROYAL ARMY MEDICAL CORPS—GAZETTE NOTIFICATIONS.

Lieutenant-Colonel George Holden Sylvester, F.R.C.S.Eng., retires on retired pay, dated October 19, 1907. He entered the Service July 31, 1880; was promoted Surgeon-Major, Army Medical Staff, July 31, 1892; Lieutenant-Colonel, Royal Army Medical Corps; selected for increased pay, March 22, 1903. His war services are as follows: South African War, 1899-1902—Staff Officer to Principal Medical Officer, Army Headquarters, afterwards Principal Medical Officer of a General Hospital (from February 12, 1901). Operations in the Orange Free State, February to May, 1900, including operations at Paardeberg (February 17 to 26), actions at Poplar Grove and Driefontein. Operations in the Transvaal in May and June, 1900, including actions near Johannesburg and Pretoria; operations in the Transvaal, east of Pretoria, July to November 29, 1900; operations in the Transvaal, November 30, 1900, to May 31, 1902. Queen's medal with 4 clasps. King's medal with 2 clasps.

Lieutenant-Colonel John Dennis Thorpe Reckitt, M.R.C.S.Eng., retires on retired pay, dated November 2, 1907. He entered the Service July 29, 1882, was promoted Surgeon-Major, Army Medical Service, July 29, 1894, and Lieutenant-Colonel, Royal Army Medical Corps, July 29, 1902. His war services are as follows: South African War, 1899-1901—Operations in Natal, 1899, Relief of Ladysmith, including action at Colenso; operations of January 17 to 24, 1900, and action at Spion Kop. Operations of February 5 to 7, 1900, and action at Vaal Kranz. Operations on Tugela Heights (February 14 to 27, 1900), and action at Pieters Hill. Operations in Natal, March to June, 1900, including action at Laing's Nek (June 6 to 9). Operations in the Transvaal, November 30, 1900, to April 1901. Despatches, *London Gazette*, January 26, 1900, and February 8, 1901 (Sir R. H. Buller, March 30 and June 19, 1900). Queen's medal with 5 clasps.

Major John Simpson Edye, L.R.C.P.Lond., retires on retired pay, dated November 2, 1907. He entered the Service July 28, 1886; was promoted Major, Royal Army Medical Corps, July 28, 1898. His war services are as follows: South African War, 1900-01—Operations in the Transvaal, east of Pretoria, July to October, 1900; operations in the Transvaal, west of Pretoria, October to November 29, 1900. Operations in Orange River Colony, May to June, 1900. Operations in Cape Colony, South of Orange River, February to April, 1900. Operations in the Transvaal, November 30, 1900, to July, 1901. Queen's medal with 4 clasps.

Lieutenant-Colonel Reginald J. Windle, M.B., is seconded whilst holding the appointment of physician and surgeon at the Royal Hospital, Kilmainham, dated October 1, 1907.

Lieutenant-Colonel Frederick S. Heuston, C.M.G., from the Seconded List, to be Lieutenant-Colonel, dated October 1, 1907.

Captain Thomas Biggam, M.B., is placed on temporary half pay, on account of ill-health, dated October 18, 1907.

Lieutenant-Colonel James S. Green, M.B., from temporary half-pay, to be Lieutenant-Colonel, dated October 22, 1907.

The undermentioned Captains to be Majors, dated October 29, 1907 :—

Ernest W. Bliss ; Percy J. Probyn, D.S.O., M.B. ; Arthur W. Hooper, D.S.O.

ARRIVALS HOME.—From India : Lieutenant-Colonels D. F. Franklin and H. G. Hathaway ; Major L. Way ; Captains M. W. Falkner, R. S. H. Fuhr, W. M. Power, and A. J. Williamson. From Gibraltar : Lieutenant-Colonel D. V. O'Connell and Captain L. F. F. Winslow. From West Africa : Captain R. F. M. Fawcett. From South Africa : Captains F. C. Lambert, O. Ievers, and E. M. Glanvill.

ARRIVALS HOME ON LEAVE.—From India : Major H. S. Peeke. From Malta : Major C. C. Fleming.

EMBARKATIONS.—For Uganda (Special Duty) : Brevet-Colonel F. J. Lambkin. For South China : Colonel H. Martin and Major S. Macdonald. For North China : Captain C. W. Holden. For India : Lieutenant-Colonel H. H. Brown ; Captain R. W. Clements ; Lieutenants A. M. Benett, F. Forrest, G. H. Stevenson, W. C. Smales and J. W. L. Scott. For West Africa : Captain H. D. Packer. For Ceylon : Lieutenants A. G. Cummins and H. E. Gotelee. For Jamaica : Lieutenant R. C. Galgey. For Singapore : Lieutenant A. A. Sutcliff.

POSTINGS.—Lieutenant-Colonel D. V. O'Connell to Eastern Command. Lieutenant-Colonel H. G. Hathaway ; Captains L. F. Forbes-Winslow, A. J. Williamson, R. S. H. Fuhr, and M. W. Falkner to Southern Command. Major L. Way to Northern Command. Major E. W. Slayter and Captain F. Ryan to Scottish Command. Captain W. H. Odium to Irish Command. Captain W. M. Power to Aldershot.

TRANSFERS TO HOME ESTABLISHMENT.—Major E. W. Slayter and Captains E. Ryan and W. H. Odium.

SERVICE ABROAD.—Lieutenant-Colonel W. J. Baker has been warned for service in Egypt, and Lieutenant-Colonel J. S. Green for India.

APPOINTMENTS.—Lieutenant-Colonel H. G. Hathaway to Medical Charge, Military Hospital, Devonport. Major E. W. Slayter appointed Recruiting Medical Officer at Glasgow. Lieutenant-Colonel A. G. Kay has received an extension until December, 1908, in the charge of "D" Block, Royal Victoria Hospital, Netley. Captain P. S. O'Reilly appointed Specialist in Ophthalmology at Portsmouth.

VACANT RETIRED PAY POSTS.—Berwick, Bodmin, Naas, Chichester, and Sandown, Isle of Wight.

CHANGE OF NAME.—Lieutenant-Colonel F. W. G. Hall has changed his name to F. W. G. Gordon Hall.

SELECTED FOR INCREASED PAY.—Lieutenant-Colonel and Brevet-Colonel F. J. Lambkin and Lieutenant-Colonel F. P. Nichols.

QUARTERMASTERS.—Quartermaster and Honorary Captain E. Lines arrived from Malta, October 21, 1907. Quartermaster and Honorary Lieutenant R. Scott arrived from Malta, October 21, 1907. Quartermaster and Honorary Lieutenant G. A. Benson embarked for Tientsin, October 31, 1907. Quartermaster and Honorary Lieutenant J. Glennon embarked for Hong Kong, October 31, 1907.

LIST OF CASUALTIES:—

Transfers to other Corps—16259 Corporal W. Thomson, to Egyptian Army ; 979 Private J. H. Cortopassi, to 7th Hussars.

Transfers from other Corps.—1357 Private E. Cary, from 2nd Battalion Essex Regiment ; 1358 Private R. Bovingdon, from 2nd Battalion South Wales Borderers.

Discharges.—14369 Sergeant E. Newhouse, on payment £25 ; 18211 Private W. Carter, termination of first period ; 5733 Private W. Roots, after three months' notice ; 12813 Private J. Wilkinson, medically unfit ; 19056 Private J. Shelton, medically unfit ; 403 Private J. Packard, medically unfit.

Transfers to Army Reserve.—812 Private J. Dick, 826 Private S. Somers, 806 Private T. Bunn, 832 Private M. Mulkeen, 843 Private M. O'Kelly, 839 Private J. Payne,

859 Private S. Lawrence, 830 Private E. Roden, 838 Private W. Scully, 19327 Private C. H. Dobson, 840 Private J. Woodhouse, 19318 Private W. G. Smith, 842 Private S. Parsons, 831 Private P. Steenson, 17635 Private D. Field, 847 Private W. Slater, 860 Private O. H. Mills, 19324 Private J. O. O'Brien, 853 Private D. Lowe, 855 Private J. Hegarty, 829 Private F. Hodson, 841 Private D. M. Laing, 19319 Private A. Field, 19311 Private H. J. Cantello, 861 Private A. Mathieson, 854 Private J. T. Cahill, 19345 Private P. J. Armstrong, 872 Private A. Robertson, 870 Private P. McGrail, 12632 Private J. T. Castelli, 879 Private F. Smith, 863 Private W. H. Ball, 875 Private A. Leyden, 882 Private J. Mabbott, 850 Private J. McKay, 864 Private A. McKean, 883 Private C. Gunton, 19333 Private J. J. Walden, 19489 Private T. Shelley, 12621 Private H. Howe, 19337 Private A. G. Martin, 885 Private A. A. Allan, 893 Private M. Campbell, 895 Private M. Farrell, 865 Private J. Flynn, 897 Private C. H. S. Andrews, 896 Private J. A. Everest, 19344 Private A. Fenwick, 886 Private J. W. Fisher, 921 Private R. Sunney, 889 Private T. Alcock, 902 Private C. Dumsday, 899 Private H. Sheard, 922 Private A. Brown, 12644 Private A. E. Bennett, 898 Private W. Cannon, 907 Private R. Dickenson, 906 Private H. J. Butcher, 908 Private W. Dawson, 915 Private B. Feeney, 12680 Private E. B. Perkins, 912 Private T. F. Simpson, 924 Private M. Neville, 19357 Private H. A. Miles, 12685 Private H. Drage, 929 Private W. Townsend, 12691 Lance-Corporal W. Ahearn, 919 Private J. R. Appleby, 931 Private J. Haines, 932 Private D. Harper, 927 Private L. Milner, 12689 Private C. J. McDonald, 941 Private M. Noonan, 16976 Private H. Hall, 926 Private J. Donnelly, 19363 Private F. V. Kemp, 938 Private C. T. Cook, 12701 Corporal F. Hoffman, 16223 Private F. W. Cox, 19369 Private J. Scanlon, 937 J. R. Kraus.

Embarkations for Abroad.—To Jamaica, per s.s. "Otrato," October 29, 1907 : 7842 Sergeant-Major C. A. Kay, 11554 Staff-Sergeant R. Spencer, 10108 Corporal W. Hinde, 17159 Private C. Jones, 17632 Private H. C. A. Lunn, 19757 Private V. Rickard, 19131 Private S. J. Weeks, 144 Private S. W. Wood, 16769 Private C. F. Cole, 17502 Private C. Fish, 18353 Private A. E. Pollen, 215 Private S. F. Iles, 19580 Private J. F. St. George, 664 Private E. Pronk, 955 Private R. McKecknie, 18021 Private J. Carlton, 18105 Private G. T. Hare, 19564 Private A. J. Wilson.

To Singapore, November 9, 1907 : 7712 Sergeant-Major H. J. Ford.

To Singapore, per s.s. "Sicilia," October 31, 1907 : 9720 Staff-Sergeant P. D. Hyett, 18253 Corporal J. Suter, 17790 Private G. H. Barber, 19401 Private A. E. Harland, 19759 Private B. Greenaway, 19859 Private F. A. Hicks, 208 Private B. J. Henry, 247 Private T. J. Doyle, 609 Private J. Day, 645 Private J. Wilkes, 698 Private H. Ide, 19637 Private R. F. Emor.

To Ceylon, per s.s. "Sicilia," October 31, 1907 : 276 Private T. D. Baldwin, 992 Private H. Killigrew, 19880 Private A. L. Parkings.

To Malta, per s.s. "Sicilia," October 31, 1907 : 12620 Sergeant T. Kirby, 16078 Corporal E. A. Sanderson.

To Hong Kong, per s.s. "Sicilia," October 31, 1907 : 9655 Staff-Sergeant W. R. Rior-dan, 12340 Sergeant T. Butler, 14123 Sergeant H. Winn, 9357 Corporal T. G. Gough, 8608 Corporal R. Houseago, 15671 Lance-Corporal R. W. Cole, 890 Private J. P. North, 977 Private W. Hill, 253 Private J. Taylor, 963 Private J. White, 939 Private G. Simpkins, 570 Private G. B. Crooke, 18766 Private W. Wardale, 866 Private W. Thinn, 86 Private Redfern, 18585 Private F. Mills, 19391 Private G. W. Walker, 17380 Private J. W. D. Haigh, 187 Private W. J. Sheppard, 12655 Private G. J. Caborn.

To North China, per s.s. "Sicilia," October 31, 1907 : 15070 Corporal H. Huggett, 19634 Private J. E. Kelliher, 19882 Private E. Arscott.

Disembarkations from Abroad.—From Bermuda, per s.s. "Bermudian," October 2, 1907 : 17706 Corporal D. Phillips.

From Egypt, per s.s. "Sicilia," October 21, 1907 : 6365 Sergeant-Major H. B. Wall, 7662 Staff-Sergeant F. G. Payne, 19939 Corporal R. Dale, 17227 Private J. Blatter, 16462 Private A. A. Bushman, 16471 Private E. Collins, 17250 Private A. Hobbs, 17274 J. A. Hubling, 17277 Private R. N. Knowles, 17475 Private P. J. Lannon, 17317 Private J. C. Reynolds, 17228 Private A. G. Thompson, 16204 Private H. Woodward.

From Malta, per s.s. "Sicilia," October 21, 1907 : 15980 Corporal A. G. Anderton, 17054 Private A. Altoft, 16262 Private A. C. Brown, 16758 Private G. H. Benfield, 16913 Private J. Darby, 17011 Private W. Kane, 16305 Private J. McVeigh, 17061 Private D. A. Bagush, 16576 Private C. D. Brown, 17173 Private C. W. Buttell, 17150 Private G. W. Connolly, 14379 Private A. Lawrence, 16830 Private T. Wallworth, 19407 Private J. Waller, 18803 Private R. Bignall.

From Gibraltar, per s.s. "Sicilia," October 21, 1907 : 16569 Corporal E. Attfield, 14729 Corporal W. H. Dawtry, 15859 Lance-Corporal P. Arnold, 16756 Lance-Corporal

N. W. Brown, 16374 Private E. W. Barney, 15999 Private A. Bye, 16989 Private H. Campbell, 16523 Private T. A. Carsberg, 16428 Private J. Down, 14786 Private H. C. Lafolley, 16666 Private W. J. McConaghie, 14896 Private R. Ritchie.

From Gibraltar, per s.s. "Oruba," October 29, 1907: 9185 Sergeant M. Davis, 19500 Private C. Hudson.

From Bermuda, per s.s. "Dahome," November 9, 1907: 9215 Staff-Sergeant Holden.

Admission into Queen Alexandra's Imperial Military Nursing Service.—17396 Private E. Bairstow, August 30, 1907.

THE FOLLOWING NON-COMMISSIONED OFFICERS AND MEN HAVE QUALIFIED FOR PROMOTION IN THE VARIOUS CORPS EXAMINATIONS.

For Quartermaster-Sergeant.—10929 Staff-Sergeant E. H. Rossiter, 10431 Staff-Sergeant H. Underwood, 9425 Staff-Sergeant C. Hook.

For Staff-Sergeant.—11272 Sergeant B. Holmes, 14503 Sergeant G. Pottinger, 18713 Sergeant W. H. Ellis.

For Sergeant.—15955 Lance-Sergeant H. G. Miller, 14621 Corporal R. Smith, 14538 Corporal H. Wells, 12264 Corporal W. G. Delamere, 13025 Corporal F. C. Bovey, 18718 Corporal W. H. Parr.

For Corporal.—14850 Private T. G. Mayman, 18099 Private J. O'Leary, 19567 Private J. T. Christie, 18518 Private G. W. Darlington, 18207 Private F. C. Cousins, 16397 Private W. G. Mills, 18982 Private A. Newman, 18335 Private W. G. Woolway, 11834 Private G. W. Hillier.

As Dispensers.—18933 Corporal H. L. Thompson, 11896 Corporal A. P. Spackman, 11867 Corporal W. Wright, 10960 Corporal A. I. Harper, 14050 Corporal W. Andrews, 18718 Corporal W. H. Parr, 10400 Corporal T. F. Catley, 11453 Corporal F. S. M. Jephys, 10898 Corporal A. J. Burke, 11417 Corporal A. Bush, 19021 Corporal A. Dell, 17210 Lance-Corporal C. E. James, 15813 Lance-Corporal A. V. Heggie, 12496 Private J. McKay.

EXTRACTS FROM CORPS ORDERS, DATED R.A.M.C. RECORD OFFICE, ALDERSHOT, OCTOBER 1, 1907.

Promotions.—The following promotions, to complete establishment, will take effect from the dates specified :—

To be Sergeant-Majors.

No.	Rank and Name	Date of Casualty	Section	Vice
8280	Qmr.-Sergt. E. E. Ward	9.7.07	..	A. L. Martin to pension.
8283	„ W. E. Lowe	1.10.07	..	P. Crowley „

To be Quartermaster-Sergeants.

6086	Staff-Sergt. W. Gough ..	9.7.07	..	E. E. Ward promoted.
9095	„ H. H. Taylor	23.7.07	..	G. Foster to pension.
9651	„ E. Birch ..	27.8.07	..	J. W. Lockwood „
9801	„ H. Duff ..	27.8.07	..	E. Birch, superny., Duke of York's R.M. School.
9709	„ H. Muggleton	22.9.07	..	P. Plunkett to pension.
8842	„ W. H. Akehurst	1.10.07	..	W. E. Lowe promoted.

To be Staff-Sergeants.

10089	Sergt. S. C. R. Chester..	5.7.07	..	C. Greenhough to pension.
10188	„ R. E. Manwaring	9.7.07	..	W. Gough promoted.
8367	„ A. E. Ford ..	12.7.07	..	W. Moore to pension.
8947	„ W. Hicks..	16.7.07	..	H. E. Burn to aux. forces.
10296	„ H. A. Bangert ..	23.7.07	..	H. H. Taylor promoted.
10445	„ E. Haynes ..	30.7.07	..	W. Fraser to pension.
10711	„ F. W. Sharpe ..	27.8.07	..	H. Duff promoted.
9861	„ C. Malyon ..	22.9.07	..	H. Muggleton promoted.
8587	„ J. Connell ..	1.10.07	..	W. H. Akehurst „
11685	„ W. Cox ..	1.10.07	..	J. Connell, supernumerary with auxiliary forces.

PROMOTIONS—(continued).

To be Sergeants.

No.	Rank and Name	Date of Casualty	Section	Vice
11211	Lce.-Sergt. L. T. Marsden	4.7.07	General Duty	H. J. Browne to pension.
12155	" A. McKay ..	5.7.07	Nursing ..	S. C. R. Chester promoted.
14469	" A. B. Mackenzie	6.7.07	" ..	G. D. Christie to Colonial forces. [moted.]
16399	" R. D. Elliott	9.7.07	Clerical ..	R. E. Manwaring pro-
14958	" H. Soady ..	12.7.07	Nursing ..	C. Hammond to pension.
17849	" C. C. Blanks	12.7.07	" ..	A. E. Ford promoted.
10540	" G. Bottomley	16.7.07	General Duty	W. Hicks ..
11318	" H. F. Dewar	23.7.07	Nursing ..	H. A. Bangert promoted.
11816	Corpl. L. A. Shepherd..	30.7.07	" ..	E. Haynes ..
12025	" A. E. Harrold ..	30.7.07	" ..	R. Jubber reduced.
12890	" J. S. Gardiner ..	27.8.07	Q.A.I.M.N.S.	F. W. Sharpe promoted.
10598	Lce.-Sergt. P. G. Knightley	8.9.07	Cooking ..	J. H. Hiatt to pension.
18912	Corpl. H. Dawson ..	11.9.07	Nursing ..	A. Miller ..
15001	Lce.-Sergt. W. Hurst ..	11.9.07	" ..	H. Grossheim reduced.
14973	Corpl. E. Lacy ..	17.9.07	" ..	T. H. V. Coad to pension.
12815	" G. Burgess ..	22.9.07	" ..	C. Malyon promoted.
14465	" R. Cottey ..	1.10.07	Q.A.I.M.N.S.	W. Cox promoted.

To be Corporals.

15671	Lce.-Corpl. R. W. Cole..		Clerical ..	
15813	" A. V. Heggie		General Duty	
16022	" J. J. Dawson		Clerical ..	
16756	" N. W. Brown		Nursing ..	
16847	" E. R. Benn		Cooking ..	
17057	" M. Ward ..		Q.A.I.M.N.S.	
17102	" D. Harvey ..		General Duty	
17180	" E. A. Norwood		Cooking ..	
17210	" C. E. James		General Duty	
17409	" H. Kimberley		Nursing ..	
17632	" H. C. A. Lunn		Q.A.I.M.N.S.	
17691	" A. Shearon..		Nursing ..	
17776	" W. Milliken		" ..	
17730	" P. Wills ..		General Duty	
17834	" F. Harman..	1.10.07	" ..	To complete establish- ment.
17926	" J. F. Winter		" ..	
17987	" A. Betts ..		Cooking ..	
18170	" L. Sufrin ..		General Duty	
18192	" M. Harlen..		Nursing ..	
18222	" A. Dady ..		General Duty	
18569	" C. Colbert ..		Nursing ..	
18577	" F. L. Read		" ..	
18728	" F. R. Cole ..		" ..	
18890	" J. Moore ..		General Duty	
18969	" E. Gray ..		Nursing ..	
8813	" E. T. H. Whit- row		Cooking ..	
9106	" J. Johnson..		" ..	
10083	" A. F. Kay ..		Clerical ..	
11018	" A. Lucas ..		Nursing ..	

Appointments.—The following appointments to Lance Rank will take effect from the dates specified :—

To be Lance-Sergeants.

No.	Rank and Name	Date of Casualty	Section	Remarks
10580	Corpl. A. Gibbons ..	1.10.07	General Duty	Special as laboratory attend. under para. 373, S.O.
9708	„ A. Hughes ..		Cooking ..	Special as superintending cook under para. 373, S.O.
15484	„ C. Jones		General Duty	As compounders of medicines.
15670	„ F. W. Goodread ..		Nursing ..	
16078	„ E. A. Saunderson ..		Clerical ..	
18863	„ J. Mulcahy ..		Nursing ..	
12588	„ J. Meason		„ ..	
12352	„ J. H. Curtis ..		„ ..	
12634	„ T. Racklyeft ..		„ ..	
14335	„ J. Cameron ..		„ ..	
16264	„ W. Harper ..		„ ..	
				To complete establishment.

To be Lance-Corporals.

9716	Private G. Wootten ..	1.10.07	Nursing ..	To complete establishment.
9993	„ R. G. Weatherhill ..		General Duty	
11158	„ G. Leggatt ..		Cooking ..	
11382	„ A. Nunn ..		„ ..	
11560	„ J. Clark ..		Nursing ..	
11827	„ W. White ..		Q.A.I.M.N.S.	
12302	„ W. Whyte ..		Nursing ..	
12411	„ A. A. Sims ..		Q.A.I.M.N.S.	
12547	„ A. Triggs ..		Nursing ..	
12619	„ M. Keohane ..		„ ..	
12651	„ R. H. Bennett ..		„ ..	
13058	„ F. G. Heggie ..		Cooking ..	
13923	„ C. Stewart ..		Nursing ..	
14336	„ J. McIlveen ..		General Duty	
14693	„ F. W. Kay ..		Cooking ..	
15861	„ J. Hindle ..		Nursing ..	
16002	„ H. W. Amsden ..		General Duty	
17767	„ J. Harris ..		Nursing ..	
16110	„ J. Wellham ..		„ ..	
16130	„ W. Lacey ..		General Duty	
16167	„ W. E. Greenham ..		„ ..	
16190	„ J. R. Cowling ..		Nursing ..	
18566	„ H. Butler ..		General Duty	
16247	„ E. S. Freeman ..		„ ..	
16325	„ A. F. Gibbs ..		Nursing ..	
16444	„ G. Stubbington ..		General Duty	
16446	„ W. Whitehead ..		„ ..	
16448	„ A. Buchan ..		Nursing ..	
16476	„ H. Page ..		Clerical ..	
16481	„ W. W. Bee ..		General Duty	
16482	„ W. C. Leppington ..		„ ..	
16471	„ E. Collins ..		Nursing ..	

Queen Alexandra's Imperial Military Nursing Service.—The following has been selected for admission into Q.A.I.M.N.S. with increased pay at sixpence (6d.) a day,

in accordance with Article 797, Royal Warrant for Pay, as amended by Army Order 153 of 1906, from the date specified:—

Attention is invited to Special Corps Order, dated May 6, 1904.

No.	Rank and Name	Date	Station
12756	Private F. H. Jones.. ..	17.7.07	Woolwich.

Nursing Section.—The following appointments to the Nursing Section of the Corps will take effect from the dates specified:—

No.	Rank and Name	Date	No.	Rank and Name	Date
12911	Pte. G. Bowen ..	6.7.07	12768	Lce.-Corpl. T. R. Kent	1.9.07
215	„ S. F. Iles ..	11.7.07	19170	Pte. A. G. Jessop ..	4.9.07
19824	„ C. H. Worrell ..		501	„ O. Benson ..	
19958	„ F. W. Hamilton ..	22.7.07	138	„ C. Oakley ..	
19990	„ A. Horne ..		336	„ G. D. Bampton ..	9.9.07
411	„ C. G. Bowden ..	26.7.07	19551	„ A. Tims ..	
272	„ R. M. Pout ..		19521	„ P. J. Murphy ..	18.9.07
874	„ F. A. Johnson ..		672	„ A. Stevens ..	19.9.07
881	„ H. David ..	1.8.07	291	„ F. Melton ..	
986	„ A. E. Godfrey ..		297	„ A. H. Furlong ..	
989	„ R. S. Moore ..		585	„ G. E. S. Webb ..	
1033	„ W. O'Shea ..		764	„ R. Boddy ..	21.9.07
664	„ E. Pronk ..		890	„ J. P. North ..	
978	„ H. F. Thackray ..	9.8.07	942	„ W. E. A. Crozier ..	
12691	Lce.-Cpl. W. Ahearn ..	1.9.07	1086	„ H. Gilliam ..	
12712	„ W. Hutchinson ..		19613	„ W. T. Armstrong	25.9.07

Advancement of Privates (Corps Pay).—The following advancements in rate of Corps Pay will take effect from the dates specified:—

*To be Advanced to the Third Rate of Corps Pay (at 8d.).
As Orderlies.*

No.	Name	Date	No.	Name	Date
12951	Wilkinson, J. ..		18340	Rouse, J. ..	
17541	McConn, P. ..		18365	Thomson, R. ..	1.10.07
17555	Kinder, M. ..	1.10.07	18551	Foster, W. T. ..	
17839	Watkins, A. ..		18830	Bell, F. ..	
18258	Tempo, H. ..				

As Clerks.

18196	White, J. J. ..	1.10.07	18380	Bodger, E. ..	1.10.07
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*To be Advanced to the Fourth Rate of Corps Pay (at 6d.).
As Orderlies.*

17421	Plume, P. ..		19453	Wingate, A. C. ..	
18498	Ross, E. R. ..		19457	West, W. C. ..	
18610	Hassard, H. W. ..		19562	Wright, R. M. ..	
18982	Newman, A. ..		19608	McPhail, C. W. ..	
18995	Hayes, E. ..		19661	Gill, E. ..	
19037	Thomas, W. B. ..	1.10.07	19709	Young, W. E. ..	1.10.07
19384	Cowen, J. C. ..		19745	Young, H. S. ..	
19406	Moore, F. ..		19759	Greenaway, B. A. ..	
19425	Smith, W. ..		19820	Stagg, H. W. ..	
19430	Wilkinson, F. ..		19933	Savegar, W. C. ..	
19444	Jones, H. A. ..		45	Moffat, T. J. ..	

ADVANCEMENT OF PRIVATES (CORPS PAY)—(continued).

As Clerks.

No.	Name	Date	No.	Name	Date
17317	Reynolds, J. C. ..	1.10.07	19856	Dolder, A. J. ..	1.10.07
18126	Walshe, T. P. ..		19982	Steele, A. C. J. ..	
19248	Hunt, J. R. ..		751	Milne, A. J. ..	
19431	Pass, H. E. ..				

As Cooks.

14183	Blackman, J. ..	1.10.07	18323	Luke, F. ..	1.10.07
14628	Honey, J. E... ..		18410	Wyeth, F. ..	
16913	Darby, J. ..		18673	Bidgood, C. W. ..	
17465	Bell, J. ..		19008	Coffey, F. ..	
17492	Warrington, S. ..		19354	Saunders, H. ..	

*As Sanitary Orderlies.**

19761	Whitworth, L. ..	13.5.07	19477	Cook, A. ..	19.8.07
18518	Darlington, J. W. ..	12.6.07	338	Kerley, G. ..	20.8.07
510	Brewer, W. ..	21.7.07	13022	McCormack, H. C. ..	1.9.07
19274	Motley, J. W. ..	24.7.07	330	Paul, R. ..	5.9.07
19906	Letchford, S. C. ..	24.7.07	26	Bax, F. ..	9.9.07
581	Edmond, H. O. ..	27.7.07	857	Sargent, F. A. ..	9.9.07

* In accordance with Record Office letter No. 31/13, dated 17.12.06.

Buglers.—The following boys are appointed Buglers from the date specified: 1116 Boy J. W. Lockwood, 1.11.07; 1118 Boy H. W. Reeves, 1.11.07.

Advancement of Privates (Corps Pay).—The advancement to the fourth rate of Corps pay at 6d., as an orderly, of 18014 Private B. J. Yate, is hereby cancelled.

Transfer—Sections.—64 Lance-Corporal W. Jenkins is transferred from the "General Duty Section" to the "Clerical Section," dated 12.9.07.

NOTES FROM PORTSMOUTH.—Major R. J. Copeland, R.A.M.C., writes (November 6, 1907): "St. Michael's Church, Portsmouth, was the scene of a charming and picturesque ceremony on Tuesday, October 15, when Miss Elaine Bedford, only child of Lieutenant-Colonel Walter G. A. Bedford, C.M.G., R.A.M.C., Commanding Military Hospital, Portsmouth, was married to Captain Eric Felton Falkner, A.S.C., eldest son of the Rev. Thomas Felton Falkner, D.S.O., late Chaplain to the Forces at Portsmouth, now Rector of Burnham Market, Norfolk. The church was prettily decorated and the service which was fully choral was conducted by the Rev. T. F. Falkner, father of the bridegroom, assisted by the Rev. E. A. Ommancey, Vicar of St. Michael's. Colonel Bedford gave away the bride, and Lieutenant C. H. C. Crocker, A.S.C., acted as best man. At the conclusion of the service the officers and warrant officers of the Army Service Corps and Royal Army Medical Corps lined the aisle, and as the happy pair left the church they passed under a glittering arch formed of crossed swords. Afterwards a reception was held at the Queen's Hotel, where a large gathering of relatives and friends assembled to drink the health of the happy couple and wish them a happy future. Among the guests were the following officers of the Corps: Surgeon-General (Retired) and Mrs. Thompson, Colonel and Mrs. Morris, Lieutenant-Colonel and Mrs. Magrath, Lieutenant-Colonel and Mrs. and Miss Thompson, Major and Mrs. Watson, Major and Mrs. Copeland, Major and Mrs. Stalkartt, Major and Mrs. Hirst, Captain and Mrs. Bliss, Captain and Mrs. Packer, Captain and Mrs. Bennett, Captain and Mrs. Sparkes, Captain Parkes, Captain Bostock, Lieutenant Laughman, Lieutenant O'Keeffe, Lieutenant and Mrs. Attwood.

"The presents, which were very numerous and pretty, included a beautiful silver-mounted inkstand from the officers of the Royal Engineers, Gibraltar, a silver tea service from the officers of the Royal Army Medical Corps, Gibraltar, a silver mounted claret jug from the officers of the Royal Army Medical Corps Medical Hospital, Portsmouth. The non-commissioned officers and men of No. 6 Company were entertained to a sumptuous tea, wedding cake being provided for each of the messes."

NOTES FROM THE WEST COUNTRY.—Major R. J. Blackham, R.A.M.C., writes (October 21, 1907): "Colonel G. D. Bourke, C.B., who has been President of the Plymouth Medical Society for the year 1906-1907, presided over the Society for the last

time at the annual dinner held on October 9. In proposing the health of the retiring President, the president-elect pointed out that the past year was the first time in the history of this ancient Society that an officer of the Regular Forces had been elected to the principal office, and as Colonel Bourke's presidency had been so successful he hoped that before long another military or naval medical officer would be elected to the Society's presidential chair. The Plymouth Medical Society is the second oldest medical organisation in England, being only slightly junior to the Medical Society of London. The following officers are joining this year: Major Gray, Captains Archer, Ellery, Douglas and Hayes, and Lieutenant Cook. Three officers already belong and others will no doubt join, so the Corps will be well represented this session. Two papers are promised by Royal Army Medical Corps officers.

"Lieutenant-Colonel Caldwell will deliver a lecture at the War Course College on the 22nd on the 'Role of the Microbe in War.' As Specialist Sanitary Officer, Colonel Caldwell will deliver the following series of lectures three times weekly to the officers and non-commissioned officers of the Plymouth Coast Defences and 8th Infantry Brigade: 1st Lecture, Food; 2nd Lecture, Water; 3rd Lecture, Air; 4th Lecture, Clothing—Alcohol; 5th Lecture, Barrack Sanitation; 6th Lecture, Field Sanitation and Diseases of Troops on Service.

"Captain Douglas has succeeded Captain Prescott, D.S.O., as Honorary Secretary to the Military Medical Officers' Society and Library, and Major Blackham has taken over charge of the Military Medical Officers' Book Club. Captain S. A. Archer has arrived at the Military Hospital, Devonport, from Dublin, and taken over the appointment of Specialist in Ophthalmology. Lieutenant J. W. L. Scott embarked for India on the 18th inst. Major H. P. Johnson, Corporal T. Rocklyeft and three men have returned to headquarters from Okehampton on closure of the temporary hospital at that station. Private Heard has proceeded to Woolwich for a course of instruction as storeman and packer. Private Shingler has been detailed for service in South Africa.

"The Administrative Medical Officer, Colonel Bourke, made his annual inspection of the Military Hospital, Devonport, last week.

"No. 7 Company Football Club is not doing so well as in previous seasons, owing to the majority of our players having gone away, but several Royal Army Medical Corps men are giving a good account of themselves in civilian clubs. Lance-Corporal Chipchase did well in the Rugby field for Devon Welsh Reserves last week, winning a game by scoring a brilliant try just on time amid much applause. He is a player of the robust type, and great things are expected of him by his comrades."

NOTES FROM MALTA.—Lieutenant P. A. Lloyd-Jones, R.A.M.C., writes (November 10, 1907): "The football season has now commenced. On the 7th instant we had a trial game and found that two promising additions have joined us since last year, while we still have eight of our old team left. We are entering, as usual, for the Governor's Cup, and hope to do better than last year.

"Lieutenant-Colonel J. H. Daly has left for Crete, to assume charge there in relief of Major C. C. Fleming, D.S.O., who has gone home on leave.

"The King's birthday was celebrated last Saturday by the fleet and garrison. All ships were dressed, while the troops lined the ramparts. At 12 noon the ships fired a royal salute, after which Fort Ricasoli fired a salute of seven guns immediately followed by a *feu-de-joie* from the troops, this was repeated twice, after which the troops gave three cheers for the King and marched off with fixed bayonets. In the evening His Excellency the Governor gave an official dinner to the senior officers of the garrison, followed by a general reception of all officers and their wives. The H.T. 'Sicilia' arrived at 11.30 a.m.; while making fast to her moorings she received the full benefit of the salutes."

NOTES FROM SECUNDERABAD, INDIA.—Captain R. R. Lewis, R.A.M.C., writes (October 10, 1907): "Brigadier-General Rimington is now commanding the station. Colonel Benson, I.M.S., has been appointed P.M.O. of the Secunderabad Brigades (temporarily). Captain Douglas, D.P.H., whose marriage took place about two months ago in Ceylon, arrived in Secunderabad on August 31, 1907, having been transferred from Bangalore here; he only remained until October 1, 1907, however, as he was transferred to Wellington to take over the duties of sanitary officer, temporarily, from Major Raymond, who has gone on sick leave. Lieutenant T. S. Blackwell has gone to Bangalore for a class in sanitation; we hope to have him back again soon, as we are still under strength and the camping season begins shortly. In about a week we hope to welcome Lieutenant-Colonel Freyer, C.M.G., back from sick leave, after enteric fever. He will again be in charge of No. 1 Section Hospital; and Major Hale, D.S.O., then proceeds home on six months' leave of absence.

"Lieutenant-Colonel J. Battersby is off about the end of November for a Christmas tiger shoot in the Nizam's dominions. We wish him luck and a big bag, which is more than likely, as he has secured one of the best districts, which is said to abound with big game.

"On Wednesday, August 28, Lieutenant-Colonel Battersby and the officers gave a dinner at the Club in honour of Colonel Benson, I.M.S., our new P.M.O. Twenty-one sat down to dinner, and the arrangements being again in the hands of our Commanding Officer, it proved a most enjoyable function. The following guests, mostly personal friends of Colonel Benson's, were invited: Lieutenant-Colonel Gimlett, C.I.E., I.M.S., Residency-Surgeon; Lieutenant-Colonel Thompson, I.M.S., Staff-Surgeon; Lieutenant-Colonel Little, I.M.S.; Captain Fleming, I.M.S.; Captain Corrie Hudson, D.S.O., I.M.S.; Captain Lunham, I.M.S.; Colonel Yate, Commanding 20th Deccan Horse; Lieutenant-Colonel Wiggin, Commanding 13th Hussars; Mr. Lefann, I.C.S.; Mr. Hankin, I.G., of H.H. the Nizam's Police; Captain Minchin, 1st Assistant Resident, and Major Wake, Cantonment Magistrate. Colonel Benson who has the reputation of being able to almost outshine Lionel Brough as a *raconteur*, gave us some exceedingly humorous stories after dinner; indeed, a considerable time was spent after desert in retailing 'reminiscences.'

"We have been more than gay here lately; in fact, Secunderabad just now, as far as gaiety and entertainments are concerned, must be second to no other station in India. The Polo Tournament for the Nizam's Cup (value 1,000 rupees) took place last week. In the finals the 20th Deccan Horse met the celebrated Golconda team and were defeated by 11 goals to 1. It is an education to watch the Golcondas play. Two members of the team, Mr. Shah Mirza Beg and Mr. Kadir Beg, No. 2 and back respectively—and probably the best No. 2 and back in all India—together with the No. 1 of the Jodhpore team, and the Rajah Kumer of Kuchbehar (son of the Maharajah of Kuchbehar), who is playing No. 3, will visit England next year and take on all comers at Ranelagh and Hurlingham.

"The next entertainment of note was held at Hyderabad—the Futteh Maidan Tent-pegging Tournament. A large number of teams entered for this, and in the Section Tent-pegging the 13th Hussars came very near to being victors. The cup was, however, eventually won by the 'African Guard' of the Nizam's Imperial Service Troops. Colonel Afsurul Mulk, Commander-in-Chief of the Nizam's Forces, was 'At Home' on this occasion.

"We have had the 2nd Fusiliers' Sports and the 13th Hussars' Sports. The Assault-at-Arms takes place shortly; and what has since been alluded to as one of the most successful dramatic performances, either amateur or otherwise, seen in this country for years past, entitled 'Maritana,' a musical burlesque in three acts, ran for nine nights to packed houses in the various theatres here. The play—and there were over fifty performers—was put on entirely by the Manchester Regiment with the exception of two outsiders, one of whom was Captain Lewis, R.A.M.C., who, as medical officer to the regiment, was allowed to perform, and took the 'funny lead.' The play will be put on again later by special desire, probably during the visit of their Excellencies the Viceroy and Lady Minto.

"The south-east monsoon began a month ago and we had some heavy showers at night; but the weather seems to have settled down again now, the temperature rising to about 90° in the shade during the day.

"The Station Hospital Cricket Club has played seven matches and won six, the last being yesterday, when we defeated the Sergeants of the 2nd Fusiliers by 147 runs and one wicket. We hope also to compete for the Ministers' Cup, as in former years.

"The health of the station is exceptionally good, and the hospitals emptier than they have been for some time.

"Last night witnessed the largest guest night of the season at the Club. Our Commanding Officer entertained a large party (mostly seniors) to meet General and Mrs. Rimington. Dancing, &c., were continued into the early hours of the morning."

NOTES FROM SIMLA, INDIA. — Lieutenant-Colonel H. B. Mathias, D.S.O., Officiating Secretary to the Principal Medical Officer, His Majesty's Forces in India, writes (October 17, 1907):—

"*Appointments.*—The following officers embarked from England on September 20, 1907, and are posted as follows: Lieutenant-Colonel G. H. Barefoot, to 8th (Lucknow) Division; Lieutenant R. S. Smith, to 3rd (Lahore) Division, to proceed first to Luck-

now to undergo one month's instruction in sanitation; Lieutenant A. H. Bond to Burma Division, to proceed first to Poona to undergo one month's instruction in sanitation. Major K. M. Cameron has been selected for the appointment of Staff-Surgeon Army Headquarters in succession to Lieutenant-Colonel A. E. Tate, who proceeds to England in December next, tour-expired. Captain E. B. Knox has been appointed Staff-Officer for Medical Mobilisation stores in 7th (Meerut) Division as a temporary measure.

Leave.—The following officers have been granted extension of medical certificate leave out of India: Lieutenant-Colonel C. C. Reilly, from September 8, 1907, to December 7, 1907; Captain D. L. Harding, from October 10, 1907, to January 9, 1908.

Transports.—As the 5th Transport 'Assaye' will now call at Aden instead of the 7th transport 'Plassy,' the following corrections are made to the list of tour-expired Royal Army Medical Corps Officers doing duty on homeward transports.

Transport and date of sailing	Rank and name	Division or brigade	Remarks
5th Transport, 'Assaye,' December 6, 1907, from Bombay (leaves Aden, December 11, 1907)	Lt.-Col. P. C. H. Gordon*	Burma ..	In medical charge (proceeding on leave).
	Major F. G. Faichnie ..	Aden.	
	Capt. M. F. Foulds ..	Aden.	
7th Transport, 'Plassy' (Hospital Ship) Jan. 3, 1908, from Bombay	Capt. W. Davis ..	7th (Meerut)	An extra officer of field rank will be detailed later.
	Capt. L. L. G. Thorpe ..	5th (Mhow)	
	Capt. F. E. Rowan- Robinson	6th (Poona)	

* Vice Lieutenant-Colonel D. F. Franklin, R.A.M.C., proceeded on medical certificate leave ex India.

"Major C. H. Hale, D.S.O., R.A.M.C., 9th (Secunderabad) Division, proceeding on leave, is detailed for medical charge of 3rd Transport 'Plassy' (Hospital Ship) leaving Bombay on November 1, 1907."

QUEEN ALEXANDRA'S IMPERIAL MILITARY NURSING SERVICE.

The following ladies have received appointments as Staff Nurse: Miss A. R. Hyslop, Miss E. S. M. Forrester, Miss K. Lowe, Miss K. M. Procter, Miss H. V. B. Wolseley, Miss A. Lee, Miss C. R. Townsend, Miss A. E. Allen, Miss A. E. M. Steen.

Postings and Transfers.—Matrons: Miss H. McCurdy, to Military Hospital, Dover, from Military Hospital, Canterbury; Miss M. Russell, R.R.C., to Royal Herbert Hospital, Woolwich, from Military Hospital, Colchester; Miss L. M. Stewart, R.R.C., to Military Hospital, Canterbury, from Military Hospital, Gibraltar. Sisters: Miss J. A. Evans, to the Queen Alexandra Military Hospital, Millbank, London, from Military Hospital, Gibraltar; Miss A. Barker, to Cambridge Hospital, Aldershot, from Military Hospital, Chatham; Miss A. L. Walker, to Military Hospital, Curragh, from Cambridge Hospital, Aldershot. Staff Nurses: Miss M. E. Don, to Cambridge Hospital, Aldershot, on appointment; Miss H. V. B. Wolseley, to Connaught Hospital, Aldershot, on appointment; Miss E. K. Parker, to Military Hospital, Portsmouth, from Cambridge Hospital, Aldershot.

Appointments confirmed.—Staff Nurses: Miss E. H. Davies, Miss I. M. Johnston, Miss F. A. Loseby, Miss C. Macrae, Miss N. R. McNeil, Miss F. J. Mitchell, Miss B. M. Nye, Miss M. C. Watson, Miss E. Fraser.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Lieutenant Paul J. O'Sullivan to be Surgeon-Captain, dated October 9, 1907.

ARMY MEDICAL RESERVE.

Lieutenant Walter G. H. Cable is confirmed in that rank.

ROYAL ARMY MEDICAL CORPS (MILITIA).

Captain (Honorary Lieutenant in the Army) J. W. Hopkins is retired, under the conditions of paragraph 55, Militia Regulations, dated February 4, 1907.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Western Command, Manchester Companies.—Captain Harold P. W. Barrow, R.A.M.C., to be Adjutant, vice Captain R. W. Clements, M.B., R.A.M.C., whose tenure of that appointment has expired, dated October 12, 1907.

East Surrey Bearer Company.—George Alfred Edsell (formerly Surgeon-Captain, 2nd Volunteer Battalion, The Oxfordshire Light Infantry) to be Captain, dated September 25, 1907.

Scottish Command, Glasgow Companies.—Lieutenant R. Y. Anderson to be Captain, dated October 15, 1907.

Northern Command, Leeds Companies.—Lieutenant H. J. Robson to be Captain, dated September 19, 1907.

OTHER VOLUNTEER CORPS.

2nd Volunteer Battalion, The East Lancashire Regiment.—Surgeon-Lieutenant R. L. Fitzgerald to be Surgeon-Captain, dated September 18, 1907.

2nd Volunteer Battalion, The East Surrey Regiment.—Supernumerary Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel W. Gandy (Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, East Surrey Volunteer Infantry Brigade), resigns his Commission, with permission to retain his rank and to wear the prescribed uniform, dated September 1, 1907.

3rd Volunteer Battalion, The South Staffordshire Regiment.—Supernumerary Surgeon-Major (Honorary Captain in the Army) C. A. MacMunn, M.D. (Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, Staffordshire Volunteer Infantry Brigade), to be Surgeon-Lieutenant-Colonel, remaining supernumerary, dated May 28, 1907.

13th Middlesex (Queen's Westminster) Volunteer Rifle Corps.—Surgeon-Major P. P. Whitcomb, M.B., is granted the honorary rank of Surgeon-Lieutenant-Colonel, dated August 6, 1907.

1st Volunteer Battalion, The Manchester Regiment.—Andrew Edward Hodden, M.B., to be Surgeon-Lieutenant, dated September 24, 1907.

4th Volunteer Battalion, The Durham Light Infantry.—Surgeon-Captain T. Benson is retired under the conditions of paragraph 103, Volunteer Regulations, dated September 26, 1907.

2nd Kent (Royal Garrison Artillery).—York Thomas Gray Moore to be Surgeon-Lieutenant, dated October 1, 1907.

6th Lancashire Royal Garrison Artillery.—Surgeon-Captain R. Humphreys, M.B., resigns his Commission, dated October 3, 1907.

6th Volunteer Battalion, The Royal Scots (Lothian Regiment).—Surgeon-Lieutenant A. J. de Spiganovicz, M.B., resigns his Commission, dated September 24, 1907. Arthur Julian de Spiganovicz (late Surgeon-Lieutenant) to be Second Lieutenant, dated September 24, 1907.

6th (Fifeshire) Volunteer Battalion, The Black Watch (Royal Highlanders).—Surgeon-Lieutenant R. T. Ferguson M.B., to be Surgeon-Captain, dated August 6, 1907.

Royal Engineers (Volunteers) The Tay Division (Submarine Miners).—Surgeon-Major G. O. C. Mackness, M.D., resigns his Commission, with permission to retain his rank and to wear the prescribed uniform, dated November 2, 1907.

Surgeon-Lieutenant J. Y. Mackay, M.D., resigns his Commission, dated November 2, 1907.

1st Dorsetshire Royal Garrison Artillery (Volunteers).—Surgeon-Lieutenant T. Telfordsmith to be Surgeon-Captain, dated September 9, 1907.

2nd Tower Hamlets Volunteer Rifle Corps.—Surgeon-Captain E. T. McDonnell resigns his Commission, dated October 12, 1907.

EXAMINATIONS.

The following results of examinations are notified for general information:—

Passed in (h) i for the rank of Captain: Lieutenants C. J. Wyatt, M.B.; M. Sinclair, M.B.; W. H. Gillatt, M.B., and L. G. Gibson.

The following remarks are made by the Director of Staff Duties in his official report on the examinations held in May, 1907:—

“*Military Law (Abroad)*.—*Lieutenants*.—The best papers, gaining 180 marks and over out of a total of 200, were sent in by: Lieutenants S. W. H. Rawlins, R.F.A.; C. P. Thomson, M.D., R.A.M.C.; H. C. Winckworth, R.A.M.C.

“(h) ii. & iii. *Royal Army Medical Corps Subjects—Lieutenants (Home Stations)*.—The knowledge shown of Regulations is, on the whole, good. Practically, if any question occurred in the office, memory would not be trusted but the book of Regulations referred to. What is required of candidates is a thoroughly good working knowledge of

the Regulations, not details, and these papers have been marked with this idea. (*Stations Abroad*)—The examination shows a good working knowledge of the Regulations. Some of the candidates have entered more into detail than was necessary.

" *Majors, Royal Army Medical Corps.*—The results of the examination in subjects mentioned in Appendix VIIIb., King's Regulations, were satisfactory."

THE ARMY AND NAVY MALE NURSES' CO-OPERATION.

PATRONESS—HER MAJESTY THE QUEEN.

TO THE EDITOR OF THE "JOURNAL OF THE ROYAL ARMY MEDICAL CORPS."

SIR,—May we beg the indulgence of your columns to appeal for funds for the Army and Navy Male Nurses' Co-operation? This Society, which is honoured by the patronage of her Majesty the Queen, is founded with the object of supplying to the public thoroughly well-trained Male Nurses and Sick Attendants of assured good character.

The *personnel* of the Society is composed solely of men who have been trained in the great Military and Naval Hospitals, viz., of men of the Nursing Section of the Army who have obtained their certificates of three years' training, and, in the case of the Navy, of members of the Sick Berth Staff who have completed their first term of service. The Nurses on the register receive the full fees they earn, less a small reduction for working expenses.

The Co-operation would appeal for help to those who feel that efficient Male Nurses should be more extensively employed in civil life, and that certain cases should not be nursed by women at all. It should appeal also to the many who wish to see employment found for men of exceptional character after they leave the two great Services.

When the Society is once started it will be self-supporting. Funds are needed to defray the initial cost of providing and equipping a suitable office to be available day and night, of advertisements, and of obtaining a small house where the men can lodge when waiting to be despatched to their cases. This latter requirement is essential in the interests of the patients served and for the securing of prompt response to all applications. It is estimated that the sum of £2,000 will put the Society upon a sound basis and enable it to commence its work at once.

Donations may be sent to the Hon. Treasurer at the office of the Society, 47B, Welbeck Street, W., where fuller information may be obtained.

We beg to remain,

Yours faithfully,
*Offices: 47b, Welbeck Street,
Cavendish Square, London, W.
November 18, 1907.*

FREDERICK TREVES.
HOWARD H. TOOTH.

ROYAL SCHOOL FOR OFFICERS' DAUGHTERS, BATH.

DECEMBER ELECTION, 1907.

Your interest and votes are earnestly requested on behalf of Victoria Grace Ferguson, aged 14, daughter of the late Surgeon-Major J. E. Ferguson, I.M.S., and grand-daughter of the late Colonel Hunter, C.B., C.S.I. Mrs. Ferguson has five children, between the ages of 10 and 17, to bring up on limited means.

The case is strongly recommended by General Sir Julius Raines, G.C.B., K.C.B.; General Sir Oriel Tanner, K.C.B.; Peter Graham, Esq., R.A.; Surgeon-General Pinkerton, I.M.S. (Hon. Physician to the King); General Pottinger, R.A.; General C. R. Blair; Colonel A. Dingwall-Fordyce (late Seaforth Highlanders); Colonel Cates, I.M.S.

REGISTER FOR INDIAN SERVANTS.

Few officers on going to India have not experienced the difficulty of getting good servants. The discomforts on arrival and of a long journey up country, unprovided with a bearer, or, what is worse, provided with a hastily selected man, taken haphazard from the crowd of indifferent or bad characters who congregate in Bombay, have fallen to the lot of most of us, whilst the period of trial and vexation until a proper staff of servants is secured is familiar to us all.

In our Corps, with regular annual reliefs, it should not be difficult to arrange for an interchange. Officers leaving India would then be able to provide places for the good and tried retainers they are relinquishing, and new arrivals would, by taking on these men, be spared many of the worries and troubles which now befall them. Further, good servants would not be lost to the Corps, and the prospects of continuous employment could not fail to have attraction for the better class of men.

With these ends in view, officers due home from India are requested to communicate to the Journal particulars of servants whom they can recommend, so that officers going out in relief may have an opportunity of securing these men. The particulars required are :—

- (1) Class of servant.
- (2) Whether for bachelor or married officer.
- (3) District or station to which he belongs.
- (4) Any special recommendations.

NOTE.—The date the officer leaves India should also be stated, and when and where the servant will be available.

Captain C. C. Cumming, R.A.M.C., Nowshera, India, thoroughly recommends his former servant, Fateh Mahomed.

- (1) Bearer, or bearer-khitmaghar.
- (2) Bachelor or married officer.
- (3) Peshawar, N.W.F.P., India.
- (4) "An excellent servant, clean, sober, honest and respectful." Has been with Captain Cumming for two years, and is willing to serve anywhere in the Punjab.

Address: Fateh Mahomed, Sudder Bazaar, Peshawar, N.W.F.P., India.

DEPÔT, ROYAL ARMY MEDICAL CORPS.

EXAMINATION OF LIEUTENANTS (ON PROBATION), ROYAL ARMY MEDICAL CORPS AND
INDIAN MEDICAL SERVICE, OCTOBER, 1907.

Corps Duties.—(Time allowed, two hours.)

- (1) What points would you pay particular attention to when medically examining an accused soldier prior to his trial before court-martial?
- (2) What instructions would you issue to the cooks in a standing camp, with a view to maintaining the kitchens and their immediate vicinity in a sanitary condition?
- (3) Briefly trace the methods of disposal of a man permanently incapacitated by wounds received in action, from the time of their occurrence to his final discharge from the Service.
- (4) What recommendations would you make with a view to preventing or diminishing casualties occurring from sore feet on the line of march?
- (5) Describe the two forms of stretcher (Mark I. and Special Mark I.) now used for the carriage of sick.

Military Law.—(Time allowed, two hours.)

FOR ALL OFFICERS.

- (1) Explain briefly the difference between the "Army Act" and the "Army Annual Act."
- (2) What persons are always subject to military law?
- (3) Describe "arrest" for—(a) Officers. (b) Non-commissioned officers. (c) Private soldiers.

FOR ROYAL ARMY MEDICAL CORPS OFFICERS ONLY.

- (4) A private soldier, of two and a half years service, with no previous entries on his conduct sheets, is awarded by his commanding officer the maximum punishment for absence without leave for ten days. State the punishment awarded, its effects on his pay, service, &c., and mention the documents upon which the award is entered.
- (5) Describe "Confinement to Barracks," and explain the difference between it and open arrest for a private soldier.

FOR INDIAN MEDICAL SERVICE OFFICERS ONLY.

Indian Articles of War.

- (6) Enumerate the various kinds of courts-martial that may be convened under Indian Articles of War. Who is empowered to convene a summary court-martial, and what are its powers of punishment?
- (7) What do you mean by the following terms? (a) Enrolment. (b) Attestation. (c) Medical subordinate.

Map Reading.—(Time allowed, two hours.)

- (1) How may the "scale" on a map be represented? Given a scale of 6 inches to 1 mile, how would you construct a scale of yards?
- (2) How are hill features represented upon military maps? Given a vertical interval between contours of 20 feet, how might the height of a hill be roughly estimated?
- (3) How may a map be "set" at night?
- (4) What points would you attend to (as far as map reading is concerned) in the selection of a site for hospital encampment?
- (5) What is meant by the following terms? (a) True north; (b) magnetic north; (c) vertical interval; (d) horizontal equivalent.

Interior Economy (for Royal Army Medical Corps Officers only).—(Time allowed two hours.)

- (1) What are the rates of regimental pay of warrant officers and the various ranks and grades of non-commissioned officers and men of the Royal Army Medical Corps?
- (2) What is the mode of procedure in the case of a soldier who is ill, and subsequently admitted to hospital?
- (3) For what periods may a soldier of the Corps now enlist? Explain what is meant by re-engaging, continuing, and extending his service.
- (4) Explain the difference between a "Regimental Entry" and a "Company Entry." Give examples.
- (5) Enumerate the common articles of public clothing, the period of wear of each, and how disposed of when worn out.

Indian Army Regulations (for Indian Medical Service Officers only).—(Time allowed, two hours.)

- (1) Briefly state what you know of the Indian Subordinate Medical Department.
- (2) Enumerate the various hospitals met with in India, and state who are entitled to treatment in each of them.
- (3) What do you mean by the term "Sick Report," and what entries may be inscribed upon them by medical officers?
- (4) If a soldier believes himself to be labouring under a grievance, what steps can he take to have it redressed?
- (5) What Boards are held in India for the purpose of invaliding, and what rules are laid down as to their composition?

EXAMINATION OF MAJORS, ROYAL ARMY MEDICAL CORPS, FOR PROMOTION, NOVEMBER, 1907.

Army Medical Organisation in Peace and War. Time allowed, three hours. Total marks, 100.

- (1) You are in charge of a large military hospital. Describe in detail your arrangements for the training of your junior officers. (25 marks.)
- (2) What is the war establishment *personnel*, Royal Army Medical Corps, of a sanitary section and of a sanitary squad, and to what are these sections and squads allotted? (20 marks.)
- (3) When is a medical officer in charge of a case in hospital required to send a certificate on Army Form B 117 to the patient's commanding officer?
In what case will a Court of Inquiry be assembled to investigate the circumstances? (20 marks.)
- (4) What are the regulations for the training and employment of chiropodists in the Army? (10 marks.)
- (5) A Militia regiment is coming up for annual training. What Medical Boards will have to be held in connection with this training, and what number of medical officers are required on the Boards? (15 marks.)
- (6) What course will be followed when it is decided to discharge from the service a lunatic soldier? (10 marks.)

Sanitation and Epidemiology. Time allowed, three hours. Total marks, 100. (Each question has the same value. Either Question 1 or Question 2 may be answered, not both.)

- (1) Describe in detail any form of filter that you are acquainted with, suitable for use by troops on manœuvres or active service. Explain precisely what you would do to maintain the filter in a proper state of efficiency.

(2) What are your views as to the "dry-earth system" of excreta disposal in camp? What are the most important points that have to be attended to in order that it may be carried out properly?

(3) You are in medical charge of troops at a station which has been destroyed by an earthquake. The sanitary arrangements have been entirely upset. You are instructed by the officer commanding station to draft a station order, detailing the sanitary measures necessary to meet the emergency. Do so, arranging the various matters dealt with in order of their relative importance.

(4) You are medical officer in charge of a transport conveying troops and families. State concisely, but in detail, the points to which you would direct your attention (a) in regard to general sanitation, and (b) on the appearance of a case of measles amongst the children on board.

(5) State what you know of the causation and mode of spread of cerebro-spinal fever, or epidemic cerebro-spinal meningitis. What preventive measures would you adopt on its appearance in barracks under your medical charge?

(6) You are Principal Medical Officer of a force 5,000 strong, occupying a position on a low range of bare hills, about five miles from flank to flank. This position has to be held defensively for a fortnight. There is no water on the hills themselves, except in a few rain pools at intervals, but there is an ample supply available on either flank of the position, easily accessible, and protected from the enemy. This supply is from the river on one flank, and from tanks on the other. Draft a brigade order detailing the arrangements for supplying water to the troops holding the position. It may be assumed that these are distributed evenly along the front, at the rate of 1,000 men to a mile of front, in detachments of about 500, each furnishing a line of outposts, and occupying a central defensive position with its main body.

Medical History, Foreign Army Medical Services, and Laws and Customs of War.
Time allowed, three hours. Total marks, 100.

N.B.—Candidates to answer I., II., and III.

I.

(1) State how the hospital arrangements for the Kabul-Kandahar march differed from those of previous campaigns in India, and give a short appreciation of the merits of the system adopted. (15 marks).

(2) What were the prominent factors on the causation of disease in the advance on, and operations about, Paardeberg, and the chief difficulties that medical officers had to contend with? Mention how they were met. (20 marks).

II.

(1) Describe in detail the organisation of hospital trains adopted in the German Army. (15 marks).

(2) State what you know of the part played by the Red Cross Societies in the medical organisation of the Austro-Hungarian Army. (15 marks).

III.

(1) Describe what you know of the neutrality of an ambulance or hospital. What acts on the parts of the Staff would compromise the neutrality? How would the presence of arms in an ambulance or hospital affect it? (20 marks).

(2) What are the conditions under which the passage of sick and wounded may be authorised by a neutral State, and what action should be taken by such a state in relation to sick and wounded brought into its territory by one of the belligerents? (15 marks).

EXAMINATION OF CAPTAINS, ROYAL ARMY MEDICAL CORPS, FOR PROMOTION.
November, 1907.

Military Law (d) ii. (Time allowed, three hours.) (Total marks, 200.)

(Twenty marks for each question. Only ten questions to be answered.)

(The Manual of Military Law and the King's Regulations may be used.)

(*N.B.*—Answers should be supported by references to the Army Act, Rules of Procedure, or King's Regulations; but a mere reference, unless it is specially asked for, will not be credited as an answer.)

(1) To what extent do the provisions of the Army Act apply to His Majesty's Indian Forces and to the Forces raised by Colonial Governments?

(2) Explain fully the power of a commanding officer to award detention for the offence of absence without leave, and make clear the regulations as to the commencement and expiry of a day of detention.

(3) Explain how fines for drunkenness are calculated in accordance with the regulations recently amended and now in force.

(4) As a commanding officer, deal with the following cases : (a) Private A. A woman states that she is his wife, and that he has deserted her. (b) Private B. It is reported that at kit inspection he has been found deficient of his South African Medal.

(5) Describe clearly the position and rights of an accused person when a summary of evidence is taken down in his presence.

(6) A commanding officer remands an accused for trial by district court martial. How is a full knowledge of all necessary details concerning the case conveyed to the convening officer and the prisoner?

(7) Under what circumstances would the charges against an accused be entered on separate charge sheets? How is the ordinary procedure at a court martial affected by charges being entered on separate sheets instead of upon a single sheet?

(8) With what object are irrelevant questions put to a witness in cross-examination? As President of a court martial state to what extent you would be prepared to disallow questions of this nature.

(9) Describe the procedure when a court martial acquits the accused of all the charges brought against him. In the event of the confirming officer disagreeing with the verdict of the court, what course is open to him?

(10) Under what section of the Army Act would the following offences be charged? (a) A man discharged from a cavalry regiment as "incorrigible and worthless" enlists in an infantry regiment; (b) a soldier is found drunk in a public-house which is "out of bounds"; (c) a soldier trying to get out of barracks is caught in the act of climbing the barrack wall; (d) a soldier groom ill-treats the charger of an officer.

(11) Give a brief summary of the regulations as to the treatment of a man who surrenders himself as a deserter at a military station in England.

(12) State the provisions of the Army Act which were brought in force by the Army Annual Act of 1907 as a punishment on active service.

(Alternative questions to any of the above, for officers of the Canadian Permanent Forces only):

(13) "The object of military law is to maintain discipline." Show how this object is affected by the provisions of a statutory code and regulations made by the Crown.

(14) A soldier enters into an engagement to serve the Crown. To what extent does this fact limit his rights and duties as a citizen?

MESSAGE.

The Director-General, Army Medical Service, has received the following interesting report upon the October examination of candidates, Royal Army Medical Corps, for the Certificate in Massage. This examination is held by the "Incorporated Society of Trained Masseuses," London.

"To Surgeon-General Sir A. Keogh, K.C.B., *Director-General, Army Medical Service.*

"Sir,—I have the honour to report to you that the massage examination of Nursing Orderlies was held by the Incorporated Society of Trained Masseuses on October 23, the paper was written at Netley, and the oral and practical examination was conducted at Millbank.

"... candidates presented themselves for examination and all passed. . . .

"The anatomy examination was quite satisfactory; the papers were up to the average, and your examiner reported that he was quite satisfied with the oral examination in anatomy. The candidates have evidently studied this part of their work most carefully; their knowledge seems to be thorough, and not in the least a parrot-like repetition of technical names.

"In the practical examination the men satisfied the examiners, who reported an improvement in gentleness, and the special work in regard to such cases as joints, sprains and fractures was improved. In regard to general massage, too much time was perhaps devoted to the limbs to the neglect of the trunk, and perhaps the attention of your teachers might be drawn to the importance of the men understanding how to apportion their time according to the amount of work to be done and the time ordered to do it in. As in some previous examinations, the abdominal work was the least satisfactory. It may be that the men have less opportunity of practice in this sort of work, and therefore special attention should be given to it by the teachers. The examiners reported that some of the movements for constipation had no 'meaning,' and in one case the 'direction' of movements was not good.

"While congratulating your teachers on the greater gentleness shown by the pupils, we hope they will not relax their efforts to combine this gentleness with depth and thoroughness.

"The above details are given in response to what is, I believe, your wish for criticism, but the examiners have expressed themselves satisfied with the pupils; they consider they have been carefully and thoroughly taught, and we can continue to congratulate you on the excellent results of your massage instruction.

"I am, &c.

12, Buckingham Street, Strand, W.C.
November 9, 1907.

"(Signed) ROSALIND PAGET,
"Director of Examinations."

NOTE.--It is interesting to observe that the non-commissioned officers and men of the Corps are working with zeal and energy in this important branch of nursing. The work done at Netley reflects the greatest credit, not only upon the candidates, but upon the teaching staff. No candidate has, up to the present, failed to pass the examination.

UNION JACK CLUB.

A BOARD and lodging scheme has been started at this Club. This is for the convenience of men wishing to spend their furlough, or part of it, in London. There will be two scales, viz.: Scale (A) and scale (B). Scale (A) at 14s. per week provides a bedroom and three meals per day for seven days. Scale (B) at 16s. 6d. per week provides a bedroom and four meals for seven days. The money will be paid in advance and members will be able to have their meals in the ordinary way, ordering whatever food they wish from the menu within the limits allowed by the scale, tickets being provided for each meal. A large percentage has been taken off the price in consideration of the week's stay, so that the member will benefit considerably by this means. The scheme is a tentative one and the numbers on the board and lodging list will be strictly limited. Though in ordinary cases the rules do not admit of a member booking a bedroom for more than a week at a time, he having then to re-book the bedroom day by day, it has been arranged that members on *furlough from abroad* may book a bedroom for so long a period as a month, although of course the numbers allowed to do so will be limited.

Arrangements have also been made by which time-expired men on arrival in England will be able to make use of the club for a certain period (not less than a month) after their arrival in England, even though they are by that time no longer serving. This has been arranged as it was thought that many men would be debarred from the privileges of the club just at the time when they might most require it, namely, on their return from foreign service, after perhaps many years absence from England.

BATCH DINNER.

THE members of the July, 1881, Batch dined together at the Café Monico on Thursday, October 17. The following officers were present: Colonel W. Babbie, V.C., C.M.G., Lieutenant-Colonels A. M. Davies, R. I. D. Hackett, G. T. Trewman, W. G. Birrell, R. F. O'Brien, E. M. Wilson, C.B., C.M.G., D.S.O., and Major S. H. Creagh. Letters of regret were read from nearly all the absent members, and it was agreed to continue the dinner which has now been established for some years, annually, as a pleasant way of meeting old friends, and to notify the fact in the CORPS NEWS in case other batches might wish to follow suit. It is proposed to meet at the same place on the first Thursday in November next, and it is hoped that all members will note the date and attend if possible. A reminder will be sent in the course of next year.

AIDS TO MEMORY.

DUTIES OF WARD ORDERLIES.

The sick have arrived at the end of the Ward,
 They're standing around in a group;
 Their rations of bread and potatoes they've brought,
 They're going to be made into soup,
 The day of admission, that's all that they get,
 Unless the M.O. orders more;
 Your first bit of duty is, see that they're washed,
 And get their clean kit from the Store.

You note that their bedding is clean and correct;
 That they have no money you'll see;
 Their ailments they always will tell you themselves,
 Unless they are marked "N.Y.D."
 Oh! talk to them kindly and never be rude,
 When asking their number and name;
 For all you're aware they are heroes, but yet
 Unknown in the annals of fame.

When they're bedded down, and the M.O. arrives,
 Your no-tif-i-ca-tion should be;
 "Sir, six fresh admissions have come to the ward,
 "They're cases I'd like you to see."
 You never must try to be Doctor yourself,
 No matter how trivial the case;
 You're there to assist, and to do what you're told,
 It's every man to his place.

You write down the orders the M.O. dictates,
 You stand at the foot of the bed;
 The book is for reference, you have to try
 To get what he says in your head.
 If Sisters are ever attached to the ward,
 Your work they will greatly reduce;
 Consult them on every conceivable point,
 And never indulge in abuse.

Obey them, respect them, and always be there,
 Whenever a case is being dressed;
 Provided of course you are anxious to wear,
 The Queen's Nursing Badge on your breast.
 For all the equipment you get you must sign,
 All temperature charts you must keep;
 Remove the foul linen and see that it's put
 In strong disinfectant to steep.

The dinners with help from the kitchen you'll bring,
 And clean the ward after the meal;
 The Orders for Patients (appendix marked 12),
 You'll see are complied with, with zeal.
 Take care that the men do not smoke in the wards,
 Unless they get leave it's a crime;
 Arrest the offenders and get them run in:
 The patients will love you in time.

Report to the N.C.O. faults you observe,
 As he does the twisting of tails;
 And all the spare time that you have in the day,
 Devote it to scrubbing your nails.

J. D. F. DONEGAN.

OBITUARY.

LIEUTENANT-COLONEL GEORGE SIMON, M.D., A.M.S.

On Wednesday, October 16, 1907, at the residence of his daughter, Whitl, Pembroke, George Simon, M.D., Lieutenant-Colonel, A.M.S., Honorary Brigadier-General, aged 70.

Lieutenant-Colonel Simon was M.D., King's College, Aberdeen, 1859; R.C.S. Eng., 1858 (King's College, Aberdeen); Fellow Royal Institute Public Hh. He formerly served in the 32nd Foot (The Duke of Cornwall's Light Infantry), Royal Field Artillery, and subsequently, 1884 to 1885, was in medical charge of barracks at Bradford, and from 1885 to 1902 of the Whittington Barracks, Lichfield.

Late on Saturday afternoon, October 19, 1907, he was laid to rest in Whittington Churchyard with many manifestations of sympathy and regret.

BIRTH.

MORTON.—At Aldershot, on October 26, to Captain and Mrs. H. Morton, Royal Army Medical Corps, a son.

DEATHS.

ASBURY.—On October 28, 1907, Lieutenant-Colonel Alfred Asbury, R.C.S.I., retired pay, Royal Army Medical Corps, aged 53 years. He entered the Service March 6, 1880, was promoted Surgeon-Major, Medical Staff, March 6, 1892, Lieutenant-Colonel, Royal Army Medical Corps, March 6, 1900; retiring on August 27, 1902.

CARTER.—On October 20, 1907, at Southsea, Honorary Deputy Surgeon-General Rowland Wimburn Carter, retired Army Medical Staff, aged 76 years. He entered the Service July 28, 1854; was promoted Surgeon March 9, 1867; promoted Surgeon-Major, Army Medical Department, March 1, 1873; promoted Brigade-Surgeon, Army Medical Department, November 27, 1879; retiring with the honorary rank of Deputy Surgeon-General, November 26, 1884. His War Services were as follows: Crimean Campaign, 1854-5—Battle of Alma, Siege and Fall of Sevastopol, and capture of Kinburn. Medal with 2 clasps; Turkish Medal. Indian Mutiny, 1858.—Actions of Khur and Bunkagaon. Medal. Afghan War, 1878-80. Medal.

GRAVES.—On October 13, 1907, at Ealing, Surgeon-Colonel William Graves, retired Army Medical Staff, aged 69 years. He entered the Service September 22, 1858; was promoted Surgeon, Army Medical Department, March 1, 1873; Surgeon-Major, Army Medical Department, April 1, 1873, Brigade-Surgeon, Medical Staff, July, 1885; Deputy-Surgeon-General and Surgeon-Colonel, August 1, 1891, retiring on June 13, 1898.

HOILE.—On October 18, 1907, at West Kensington, Honorary Brigade Surgeon Edmond Hoile, M.D., Surgeon-Major retired, Medical Department, aged 70 years. He entered the Service September 22, 1858; was promoted Surgeon, Army Medical Department, March 1, 1873; Surgeon-Major, Army Medical Department, December 6, 1873; retiring with the honorary rank of Brigade-Surgeon, October 1, 1883. His War Services were as follows: China War, 1860.—Action of Sihho, taking of Tangku, storming and capture of the Taku Forts, and surrender of Peking. Medal with 2 clasps.

EXCHANGE.

The charge for inserting Notices respecting Exchanges in the Royal Army Medical Corps is 5/- for not more than five lines, which could be forwarded by Cheque or P.O.O., with the notice, to Messrs. G. STREET and CO., Ltd., 8, Serle Street, London, W.C., not later than the 22nd of the month.

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It is requested that all Cheques or Postal Orders for Subscription to the Journal, Corps News, Reprints, &c., be made payable to the "Manager, Journal R.A.M.C.," and not to any individual personally.

The Editor will be glad to receive original communications upon professional subjects, travel, and personal experiences, &c. He will also be glad to receive items of news and information regarding matters of interest to the Corps from the various garrisons, districts and commands at home and abroad.

All such Communications or Articles accepted and published in the "Journal of the Royal Army Medical Corps" will (unless the Author notifies at the time of submission that he reserves the copyright of the Article to himself) become the property of the Library and Journal Committee, who will exercise full copyright powers concerning such Articles.

Matter intended for the Corps News should reach the Editor not later than the 15th of each month for the following month's issue. All these communications should be written upon one side of the paper only, they should by preference be type-written, but, if not, all proper names should be written in capital letters (or printed) to avoid mistakes, and be addressed The Editor, JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, Royal Army Medical College, Millbank, London, S.W.

Communications have been received from Colonel F. J. Lambkin; T. Ligertwood, C.B. Lieutenant-Colonels A. R. Aldridge, W. G. Macpherson, C.M.G., C. Birt, N. Manders, R. Kirkpatrick, C.M.G., and R. R. H. Moore. Majors H. V. Prynne, H. J. M. Buist, D.S.O., and W. S. Harrison; L. Rogers, I.M.S. Captains C. F. Wanhill, J. E. Hodgson, W. J. Waters, A. E. Weld, Howard Ensor, D.S.O., and R. Hole; J. H. P. Graham (M.). Lieutenant A. I. Fortescue.

In the event of reprints of articles being required by the authors, notification of such must be sent when submitting the papers. Reprints may be obtained at the following rates, and other reprints at proportionate rates :—

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